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THE RELATION OF AMERICAN INDIAN LINGUISTICS TO GENERAL LINGUISTICS*

EDWARD SAPIR

THE IMPORTANCE of American Indian linguistics to the general linguist is so obvious that it does not need to be stressed. A few indications, however, of the light thrown by American Indian languages on general problems of linguistics may be welcome. Many indications of the general importance of the Americanist's field have been given by Dr F. Boas in the "Introduction" to his *Handbook of American Indian Languages.*[1]

One of the problems which the general linguist has to deal with is the distribution of phonetic elements. It has become well known that sounds and groups of sounds have their geographical distribution like any other cultural trait, and from the strictly anthropological point of view there is no reason to suppose that these distributions would necessarily follow the lines given by a genetic classification of languages. It so happens that the languages of native America are a particularly fruitful field for this type of research. It is remarkable, for instance, that the phonetic systems of the languages spoken along the Pacific coast south of the Eskimo area have many characteristics in common in spite of the fact that they are far from being members of the same genetic group. The phonetics of Tsimshian, for instance, agrees in numerous peculiar respects with that of such languages as Kwakiutl and Nootka, yet it is almost certain that the genetic affiliations of Tsimshian are with languages far to the south and that its genetic relationship to Kwakiutl and Nootka is, at best, exceedingly remote and in all probability non-existent. Analogous phenomena have from time to time been

* This posthumous manuscript from the Boas Collection of the American Philosophical Society is made available through the generosity of the Society. C. F. Voegelin and Morris Swadesh kindly brought our attention to it—Editor.

1 Bulletin, Bureau of American Ethnology, no. 40, part 1, 1911.

pointed out in other parts of the world. Thus, Armenian owes certain of its phonetic peculiarities to contact with Caucasic languages in spite of the fact that it is itself a typical Indo-European language. The American Indian field may very appropriately be thought of as an object lesson of the greatest importance for a general theory of historical phonetics, for the irregular distributions of many of the linguistic stocks on the continent has been especially favorable for the spread of phonetic features far beyond the confines of a single genetic group. Experience gained from a study of American Indian data must have important methodological consequences for judgments on phonetic history in such fields as Indo-European and Hamitic-Semitic.

What applies to phonetics is, to a considerable extent, also true of morphological features. In general, we may operate with the hypothesis that a given type of linguistic structure tends to maintain itself for exceedingly long periods of time. But it cannot be denied that important re-formations can be, and often have been, due to contact between fundamentally alien languages. The American Indian languages that we have sufficient knowledge of seem to behave very differently in this respect. Thus, the languages of the Athapaskan group are singularly conservative in form as well as in phonetics and vocabulary in spite of their enormous and irregular spread. There is far less difference in form between, say, Chipewyan, Hupa, and Navaho, three languages selected from the Northern, Pacific, and Southern divisions of Athapaskan, respectively, than between Baltic and Slavic within the Indo-European group. Here we have languages that seem to have been significantly resistant to exotic influences. On the other hand, there are important morphological characteristics which seem to have diffused over a continuous territory occupied by languages of alien stocks. A good example of such a distribution is the presence of instrumental prefixes in the verb in the Maidu (north central California) and Takelma (southwestern Oregon) languages of the Penutian group, in which such prefixes are not ordinarily found. It seems very probable that we have here an influence exerted by the Hokan languages such as Shasta and Karok (northwestern California) on neighboring languages. These instrumental prefixes are further found in Shoshonean, which adjoins the area under discussion to the east. A careful study of a distribution of this sort should help materially in clarifying our ideas about the relative persistence or non-persistence of grammatical features. Even if the importance of diffusion of formal linguistic features as an explanation of linguistic resemblances may not be as far-reaching as some diffusionists suppose, it nevertheless remains true that the intercrossing influence of diffusion must be taken into account very much more seriously than is done by students

of comparative and historical grammar in the Old World. Here again American Indian linguistics seems destined to become an important object lesson in linguistic methodology.

Far more important, however, than the suggested importance of American Indian linguistics for problems of diffusion is the intrinsic analysis of these languages. As is well known, they are unusually variant in form from each other, and it is perhaps not too much to say that there is hardly a morphological type which is not illustrated in the American field. It has often been pointed out that many of these languages are highly synthetic or polysynthetic in form, but on the other hand there are not a few languages in native America which are highly analytic in structure. In view of the confusion which still prevails in regard to the relation of linguistic form to race and cultural backgrounds, it is peculiarly important to survey the American Indian field, for within it we find maximal morphological divergences within a relatively homogeneous race and with complete lack of correspondence with the cultural groupings of the ethnologist. This means that American Indian linguistics stands as a silent refutation of those who try to establish an innate psychological rapport between cultural and linguistic forms. Surely, the content of language reflects culture with painstaking accuracy but its morphological outlines seem to be essentially independent of such cultural influence. Just what this means in a psychological sense it is for the future to determine. For the present it is obviously important to gather the abundant materials on this point. The American Indian languages are in a peculiarly favorable position to give us the required data. It is possible to find areas in native America in which a relatively uniform culture is shared by peoples who speak languages that present the very widest possible contrasts of form. Such entities as the West [Northwest] Coast culture area, the Plains culture area, and the Pueblo culture area are in flat contradiction to the linguistic affiliations of the languages spoken within them. If, therefor, there are fundamental relations between cultural and formal linguistic phenomena, they cannot be of the type which so many linguistic philosophers and social scientists are in the habit of discovering. Here again American Indian linguistics is an invaluable test field for solid linguistic thinking.

A linguist who is familiar with the forms of only one circumscribed group of languages, such as Indo-European or Semitic, necessarily runs the risk of universalizing formal features which are after all local in their distribution, or of rejecting as unlikely conceptual peculiarities which are abundantly attested outside of his special group of languages. American Indian languages give abundant opportunity to correct both of these possible misconceptions. The Indo-

Europeanist, for instance, will find nominal classifications based on sex gender sparely represented in America and this negative fact cannot but give him a new respect for the possible genetic value of the presence of sex gender in Indo-European and Hamitic-Semitic. Again, the rarity in America of formal comparatives and superlatives in the adjective gives this formal feature of Indo-European a contrastive emphasis that it might not otherwise seem to possess. On the other hand, the development of secondary cases from postposed locative particles, ordinarily felt to be a rather strange feature of certain Indo-European languages, finds numerous parallels in other languages all over the world, including those of America. The conceptual separation of aspect and tense comes out very clearly in many American languages, whereas the two categories tend to be blended in various ways in Indo-European and Semitic. These are but a few out of hundreds of examples of what may be learned from American Indian languages of basic linguistic concepts, or rather of the grammatical treatment of basic concepts. There is hardly a classificatory peculiarity which does not receive a wealth of illumination from American Indian languages. It is safe to say that no sound general treatment of language is possible without constant recourse to these materials.

A word may be said on the value of field work in American Indian linguistics for those not planning to occupy themselves professionally with them. Modern training in linguistics must emphasize more and more the importance of direct contact with speech rather than the conventionally recorded language. It is of great pedagogical importance for a young Indo-Europeanist or Semitist to try to work out inductively the phonetic system and morphology of some language which is of an utterly different structure from those that he has been studying. Such an experience frees him from numerous misconceptions and gives him the very best evidence that he could wish for the phonetic and grammatical consistency of a language that is handed down entirely by word of mouth. One may go so far as to say that only students who have had this type of experience have a thoroughly realistic idea of what language is. For this type of training nothing more suitable could be thought of than an investigation into one or more of the languages of native America. They are readily accessible and competent interpreters can be found in most cases. It may be pointed out that E. Sapir's *Language* and L. Bloomfield's *Language* owe not a little to the personal experience of the writers in the inductive study of American Indian languages.

PSYCHOLOGY AND ANTHROPOLOGY: SOME PROBLEMS OF JOINT IMPORT FOR THE TWO FIELDS

FLORENCE L. GOODENOUGH AND JOHN E. ANDERSON

INTRODUCTION

BOTH PSYCHOLOGISTS and anthropologists are interested in the study of human behavior. Anthropologists, however, have been more concerned with the varieties of behavior shown in different cultures and environments, whereas psychologists have been more concerned with the variations in behavior that occur within a given culture. Not only is there a difference in the content of the two fields; there are also differences in methods and techniques. As science has become more specialized, more need has arisen for collaboration between scientific disciplines in the study of common problems.

It is the purpose of this paper to point out certain areas in which substantial gain might come to the understanding of both anthropologists and psychologists from closer contact between the two fields. Excluded from discussion is the very important and well-developed scientific area of physical anthropology which, despite a very great overlap in statistical methods, has little overlap in content with the psychological field.

THE PROBLEMS AND METHODS OF ANTHROPOLOGY

For purposes of classification the type of studies made by the social anthropologists come under three main heads as follows:

1. *Functions common to many cultures.* The variation in functions and structures in different cultural backgrounds is studied. The technique involves some definition of an object, structure, or function followed by a description or analysis of its variations in different cultures. Instruments for killing game or attacking opponents vary widely with culture but have fundamental similarities. Marriage, leadership, or education may be traced through various cultures. This approach is somewhat atomistic in that it separates out a particular function which is treated as a unit more or less independently of the culture of which it is a part. Because of the tremendous variance in the adaptability of human beings, the descriptions and analyses resulting from this type of study are almost endless. However interesting they may be, they seldom give more than a partial picture of the cultural process.

2. *Descriptions of cultures in terms of their ideology and expressed rules.* Here an attempt is made to describe a culture as a whole with emphasis upon its organization and the expressed relations between the members of the group. The assumption is often made that the expressed rules and overt patterns, when described in detail, comprise the culture. Hence, little or no account is taken of the exceptions or divergencies in practice or attitude from the expressed formulations. Studies of this type may be compared with the study of civics in the grammar grades, which gives to the pupil all the forms but seldom reveals the actual nature of the controls or lines of organization in a modern community. The error made arises out of the assumption that formal law antedates practice, whereas law rationalizes practice and lags behind it.

3. *Community studies.* During recent years a number of documentary studies of communities which vary from simple descriptions to very complex analyses have appeared in the anthropological literature. Some of these use statistical and analytical techniques, some have used interviews and some have employed other methods. An attempt is made to picture the community as a whole by describing its practices. Often these studies depart from the official ideology and expressed rules of the community by analyzing the actual practices of individuals. In some instances, however, these studies neglect the problem of the interaction of the members of the group.

As a whole, the job done by the anthropologists is based upon report and description rather than upon experiment. The reader is impressed with the detail and completeness, but is left with little in the way of generalization. Implicit in the presentation is the assumption that the particular description is typical and is based on an adequate sample of the culture or the population. But when one talks in terms of typicalness, he uses a statistical term. This is an area in which very precise techniques are available for determining the central tendencies of a sample, the variations within that sample, and the amount of confidence to be placed in any generalization or statement made with reference to the sample or to the total population from which it is drawn. Techniques are available for evaluating the adequacy of sampling, and the number of observations necessary for sound generalization. Generally speaking, workers in social anthropology have made little use of these statistical processes or concepts. They have shown little awareness of the problem of typicalness or representativeness and have frequently disregarded the size of sample necessary for confidence to be placed in the results.

THE PROBLEMS AND METHODS OF PSYCHOLOGY

The psychologist is interested primarily in the likenesses and differences in individuals within a particular culture and in the generalizations to be derived from them.

1. From his observations of behavior he moves on to concepts of generalized traits or characteristics. He studies the conditions under which behavior is changed by experience, as well as the changes that take place. His primary problems center in the modification of behavior under controlled conditions. He is much concerned with statistical methods and is aware of the need of quantification and of describing the central tendencies and the variances in the groups studied. But in so doing he frequently breaks the individual up into a host of minute characteristics. In this sense much of his work tends to be atomistic.

2. The psychologist has developed many techniques for recording behavior in actual situations, which range from specifically designed experiments to the quantification of casual and incidental observations and interviews. His experience in developing tests of behavior, of which many are exceedingly ingenious and represent substantial advances over superficial or naïve observations, leads him to place too much reliance upon his tests and to apply them in situations and under circumstances for which they are not appropriate. This has not only been true in his use of intelligence tests, but also with respect to other types of measurement or appraisal. His reliance upon objective recording and his preference for formally standardized devices as compared to simple or casual reporting makes him critical of statements made about behavior without proof. It has also made him too ready to rely upon his own tables of statistics.

3. Because his contacts are mainly with individuals having a common cultural background, the psychologist tends to regard some of the outcomes of his studies as universal and permanent. It has sometimes been said that because the constant elements in experience permit easy and consistent generalizations, the experimenter is tempted to disregard variability or change. Because in far too many instances the experience of the psychologist is limited to a restricted group with background similar to his own, he may fail to realize the limitations of his findings and impute to them a degree of generality which they do not, in fact, possess. Because of the relatively stable nature of his own culture, he is likely to choose problems which make for constancy rather than those which open up new avenues of thought.

In general, we can say that the psychologist is much more likely to attack a preconceived problem for which a particular hypothesis can be formulated

and about which an experiment or systematic series of observations can be designed. This means that he is much more aware of the problems of sampling, precision of measurements, and objectifying material. Because of his preconceptions the psychologist may and often is a poor reporter; he is, however, likely to be a very good technician.

SOME AREAS FOR COÖPERATIVE RESEARCH

Both the psychologist and the anthropologist meet similar problems which each attacks with his own techniques. As one tries to lay out areas of possible coöperation or integration, he sees that the distinction between the scientific disciplines which deal with human beings is not so much in terms of the problems attacked as in the point of view with which those areas are approached. As a result of these differences, frequent gaps appear both in our scientific information and in the concepts and theories arising from it. Many of these gaps could be filled by a concerted attack. In the following subdivisions a number of suggestions have been made with respect to areas or problems upon which more active collaboration would be desirable.

1. *Sensation and perception.* While some information is available with reference to the differences between primitive and civilized people and within various groups of people, nevertheless these studies have been chiefly concerned with sensory acuity as such and have used relatively simple measures. The major problem of interest to the psychologist and perhaps also to the anthropologist is the problem of the organization of perceptions, and the manner in which sense data are integrated and tied in with the practical experience of the individual to produce effective adaptations in a particular environment. For this reason, studies of possible differences in sensory acuity among different cultural groups derive their chief interest from the fact that they afford some partial control for the interpretation of wider areas of perception and conduct. For example, if it can be shown that one group is definitely superior to another in distance vision, the differences found in the interpretation of phenomena that take place at a distance may arise from the fact that one group is able to see and respond to small cues that fall outside the visual range of the other. On the other hand, such superiority may arise not so much from greater acuity as from experience and training in interpreting cues that are available to both. Thus, the detection of a lion by a native guide at a point where the white hunter can perceive nothing but undergrowth, may indicate either a difference in visual acuity or a difference in experience and training. A study of the relative contribution of acuity and

apperceptive mass as determined by appropriate experiments would be more significant than exclusive concern with either factor considered separately.

2. *Language and thought.* For generations, psychologists, anthropologists, sociologists, and philosophers have speculated about the origin of language in the human race and its beginnings in the modern infant. A relatively straightforward question which might throw some light on the second of these questions, at least, is the following: How early and in what manner are the vocalizations of infants affected by the specific languages which the child hears and will later speak? Whether or not recognizable differences exist in the vocal sounds made by very young infants of different racial or nationality groups is unknown. However, we do know that at a later age their formal speech patterns will differ greatly, not only with respect to their organization into specific words and sentences but also with regard to some of the phonemes which make up these words. The Spanish "v," the German "ä," the Hottentot "click," and a number of other sounds occurring in various languages are not found in English speech; the accent of the Oxonian differs in many respects from that of the midwestern American. A study of the developmental processes by which such differentiation comes into being would certainly be well worth while. Psychologists have developed a number of suitable methods for securing and handling the speech data, while anthropologists are likely to have more ready access to the subjects to be used in such an investigation. They are also in a somewhat better position to secure related facts with respect to cultural practices and linguistic forms which might well have some bearing upon the matter.

Another question which has common interest for both groups may be phrased as follows: To what extent, if any, are the form and idiom of a given language associated with differences in the typical thought and behavior of the groups using the language? For example, many people regard the Germans as heavy and unemotional in their ways of thinking and acting, while the French are looked upon as volatile and excitable. To some people, likewise, the German and the French languages seem to have the same characteristics, but no one has offered anything more substantial than popular belief in support of either statement. The study of these relations is not easy, but it should be possible to secure some evidence that bears upon the topic by the use of such measures as length of sentence and length of word in typical samples of the written or spoken language of various groups. It might also be possible, as Piaget, McCarthy, and others have shown, to classify words or sentences with respect to emotional tone.

The determination of national characteristics is, of course, greatly complicated by the existence of stereotypes with respect to these matters. But it might

be possible to get away from this, at least to some extent, by the use of attitude scales, standardized interviews, and similar techniques which can be applied directly to the members of the group in question.

Stuttering is a problem with which clinical psychologists have been concerned for many years. Although a number of different theories have been developed as to its cause and treatment, there is as yet no general agreement among authorities as to which of the various alleged factors is primarily responsible for the difficulty. It is surprising, therefore, that so little has been reported with respect to the frequency of stuttering among primitive peoples. Yet much light, it would appear, might be thrown on this question by means of such a study. One of the most widely held theories assumes that the factor primarily involved is incomplete or changed lateral dominance. Because some investigators report that the proportion of individuals known to have been forced to use the right hand in spite of a "native" preference for the left is definitely greater among stutterers than among non-stutterers, a causal relationship between the two facts has been assumed. Accordingly, a study of the extent of stuttering among different primitive groups might well be accompanied by a study of the proportion of the right- and left-handed persons as well as by a study of the attitudes of those groups with respect to handedness. If, as Dudley Kidd reports, there are some primitive groups among whom lefthandedness is regarded with such superstitious dread that drastic procedures are used to correct any observed tendency in this direction when shown by children, it is reasonable to expect that stuttering among such groups would be relatively common. If, on the other hand, there are other groups among whom hand preference is not thought to be important and who, therefore, make no special effort to change whatever laterality preferences may appear, one would expect little or no stuttering within such a culture. One would also expect less pronounced differences in the proportion of persons showing preference for one hand as opposed to the other.

In contrast to earlier work in the field of language which placed chief emphasis upon form and structure, modern studies have considered the functions of language in addition to its form. This is well exemplified in the work of Lévy-Bruhl, an anthropologist, whose student, Piaget, has made fundamental contributions to psychology. Both regarded language as an expression of thought and concerned themselves with the function or meaning of language. The work of Piaget on developmental trends in children's explanation of causal relationships has given rise to a number of studies on this problem among children of different cultures, notably some of the Southwestern Indian tribes. More work along similar lines would be desirable.

A method used by psychologists for the study of inductive reasoning consists in observing the methods used in the solution of mechanical puzzles or other problems. After each attempt at solution, the subject is questioned as to his reason for this or that procedure. These reasons can usually be classified into types representing different levels of inductive thought. The time required for solution on successive trials of the same puzzle will, as a rule, distinguish between the more or less accidental solutions arising through trial and error and the "insightful" solution in which the underlying principle is grasped. A study of typical members of different culture groups by methods such as these might yield significant information on the habits of thinking and the methods of attacking problems characterizing the various groups.

3. *Intellectual processes.* Advocates of the doctrine of racial equivalence have stressed the idea that the inferior performance of certain groups on intelligence tests standardized upon urban white children is essentially a function of the content of the tests used. These tests, they say, include chiefly tasks of a kind with which the more primitive groups have had little experience; they do not attack the kind of abilities and skills which the latter have developed in accordance with their particular cultural needs. The hypothesis is a plausible one which should be answered in terms of experiment rather than by emotionally toned arguments. If it is true, it should be possible to develop a series of tasks *selected from those required by the culture in question* which would differentiate between the abler and less able members of the group in question and with respect to which white children would be as much handicapped, relatively speaking, as the primitives are with respect to tests designed specifically for the whites. A few attempts have been made along this line but for the most part such tests have been designed by persons so thoroughly imbued with the concepts of the intellectual requirements of our own civilization that they may have been unable to think constructively in other terms. Even though they may have taken care to familiarize themselves with the cultural pattern of the other group, their system of values is still that set by a white civilization. Ideally, a test designed for use in a primitive group should be developed by some one reared in that culture. If this is impossible, an anthropologist thoroughly familiar with the culture might design tests or be in a better position to coöperate with psychologists familiar with the techniques of test construction in carrying out a project of this kind.

During recent years new trends in the methods used for the study of developmental processes has resulted in significant advances in the understanding of the

individual and his background. The older cross-section studies have been supplemented by longitudinal studies in which the same individuals are followed through a period of years, during which detailed information is obtained. This longitudinal approach not only gives insight into the developmental processes within the individual, but also into the environmental or cultural background in which the individual operates. The longitudinal method would seem to be unusually appropriate for the study of the factors which operate within a particular culture, as well as permitting comparisons between cultures.

Particularly is this the case in the area of intellectual development. Some have held that the poorer performance of the dark-skinned races on tests of intelligence as well as their intellectual achievement in other lines arises primarily from a lack of opportunity. As evidence for this point of view, they offer the fact that in some studies, at least, relatively little difference between the performances of young children of different races appears but that the differences between racial groups steadily increases as age advances. There is not as much scientific evidence on this point as we could wish because in some instances the statements have mainly been based upon casual observation which is rarely dependable because it is affected by stereotyped ways of thinking, and in other instances because the data were obtained from cross-sectional studies which may well have involved bias in the sampling of subjects at different age levels.

4. *"Personality" differences of a non-intellectual character.* The content of night dreams has led to much theorizing by psychoanalysts and psychiatrists. Psychologists, also, have been interested in the content of night dreams but have not imputed to them as much allegorical significance as the Freudians. It has been found, for example, that the content of night dreams varies with age, sex, and to some extent with socio-economic status, particularly among adolescents and adults. The anthropological literature contains many descriptive accounts of the dreams of individual persons from various culture groups. Few attempts, however, have been made to relate these dreams to the lives of the individuals concerned or to compare the typical dreams of persons of different cultures. Inasmuch as the question of dreams and their significance has been a topic of widespread interest from Biblical times up to the present day, it would appear that more systematized attack upon this problem by more scientific methods than have been employed in the past might yield information of decided value.

Modern interest in the so-called "projective methods" of studying personality differences has increased rapidly during the past decade. The basic idea underlying these techniques is that each individual lives, to a great extent, in a "private

world" of his own contriving, about the nature of which he is himself only partially aware and is usually unwilling to disclose to others. Nevertheless, inasmuch as much of his overt behavior is dictated by and consequently is an expression of this private world of feelings, urges, desires, and attitudes, it may be explored by an outsider, at least to some extent, by presenting the subject with a series of situations which are susceptible to interpretation in any one of a variety of ways. The particular interpretation placed upon such a situation by a given individual will be indicated by the nature of his reaction to it. The Rorschach ink-blots, the series of pictures comprising Murray's Thematic Apperception Test, and various kinds of dramatic or play situations may be used for this purpose. The great difficulty with experiments of this kind arises from the problem of interpreting the wide range of responses that appear when free choice is allowed. But the inherent possibilities of these methods for the study of cultural differences is so great that anthropologists and psychologists interested in cultural phenomena can hardly afford to neglect them.

The methods developed by Moreno in connection with his sociometric index might well be used in the study of primitive personality and social organization. In addition to these techniques, the use of standardized interviews designed to ascertain the reasons why certain persons are preferred to others or are judged better fitted to meet certain specified cultural needs might be used. It would be enlightening to know why a person is chosen as the leader of a hunting expedition or selected to perform certain religious rites or ceremonies. It would be even more enlightening to compare the reasons for such choices among different culture groups.

CONCLUDING NOTE

The problems suggested here constitute only a small sample of the endless number that are of joint concern to anthropology and psychology. They have been mentioned, not so much because of their inherent significance, but rather as a means of calling attention to the need for closer coöperation between two groups which, in spite of the avowed preoccupation of each with the behavior of mankind, have nevertheless contrived to remain unfortunately remote from each other with respect to the problems undertaken by each and the methods employed by their solution.

This cleavage is as regrettable in the world of science as it has proved to be in the field of world affairs where we are beginning to see that isolationism no longer makes for effective progress. Industrial advance, the development of modern methods of transportation, and the tremendous strides that have been made in the field of mechanical invention have made the problems of one nation

inexplicably involved with those of another. In like manner, advance of scientific knowledge has extended the boundaries of the various scientific disciplines until the lines of demarcation between them are no longer clear-cut. More and more we are coming to realize that the sciences constitute an integrated whole, the nature of which is so complex and many faceted that only concerted effort will enable us to understand and deal with it effectively. Joint attack upon problems of mutual interest may well give rise to understanding when individual effort can yield only an incomplete and often a distorted picture.

UNIVERSITY OF MINNESOTA
MINNEAPOLIS, MINNESOTA

DISTRIBUTIONAL VARIATIONS OF BRIDE-WEALTH IN THE EAST AFRICAN CATTLE AREA

MARION PEARSALL

INTRODUCTION

MARRIAGE IN EAST AFRICA, as in some other areas of the world, ordinarily involves the transfer of valuable property from the family of the groom to the family of the bride. The sum given far exceeds that which the groom will receive in the form of gifts from his future parents-in-law and is large enough to be considered more than a mere gift on his part. This transaction both affects and effects a variety of social relations between the two families involved. It is the aim of this paper to inquire into the economic and social aspects of the custom of so-called bride-purchase in East Africa and its role in the creation and maintenance of mutual obligations and interrelationships between the two families.

The East African Cattle area as outlined by Herskovits[1] has been chosen for this study because it is a fairly clearly defined and homogeneous area in which the tribes resemble each other closely in most culture traits and particularly in their marriage customs. Any of a number of other areas might have been selected for the study of the general problem, and somewhat different results might be expected according to the differing modes of life and social institutions of these areas.

One of the most significant features of East African culture is the great emphasis placed on cattle, which are objects of great devotion and symbols of wealth in addition to their utility value in producing milk. They are closely woven into the fabric of everyday life, figuring in economic transactions and at ceremonies of birth, initiation, death, and especially marriage. Not all the tribes of the area are equally blessed in the possession of cattle or indeed of other livestock or movable property representing wealth. In some tribes most of the cattle are in the hands of the chief, while in spotted regions between Lake Nyasa and the Zambesi, Limpopo, and Olifants Rivers the tsetse fly makes cattle-raising difficult or impossible.[2] The question arises whether the poorer tribes share the idea of bride-purchase with their wealthy neighbors. Is the possession of

1 M. J. Herskovits, *The Cattle Complex in East Africa* (American Anthropologist, vol. 28, pp. 230-272, 361-388, 494-528, 633-664, 1926), p. 249.

2 B. Dicke, *The Tsetse-Fly's Influence on South African History* (South African Journal of Science, vol. 29, 1932), p. 792.

wealth necessary to the concept of bride-purchase or are other commodities, such as service, equivalent?

A survey of the literature on East Africa shows that individual investigators have seen the problem of bride-purchase in a variety of lights and have drawn greatly differing conclusions as to its origin and function. Interpretations range from the opinion that women are bought and sold as merchandise to the belief that the display of wealth at the time of marriage has only ceremonial significance. In most instances conclusions have been based on the study of a single tribe or a small group of tribes.

The present study attempts a distributional survey in the belief that the custom represents a single idea in the area with a number of facets or phrasings among the several tribes. To facilitate such a survey a list of practices connected with betrothal and marriage, divorce, children, and the inheritance of widows was devised. This list must, of course, be supplemented by more general and explanatory data before any conclusions can be drawn concerning the significance and function of this type of marriage in terms of native usage.

There has been considerable disagreement among students of African culture over the proper term by which to designate the goods given for a bride. Bride-price, dowry, bride-wealth, and various indigenous words such as "lobolo," "mala," "bogadi," and "chiko" have been used. Bride-purchase is perhaps too suggestive of a buying-selling transaction. Exception is taken to the term dowry because it ordinarily connotes goods brought by a woman to her husband at the time of marriage. No one native term is applicable to all the tribes of East Africa although "lobolo" is the most common term and has often been applied in a general sense. Recently there seems to be an increasing tendency to designate the goods as bride-wealth; therefore that is the term which will be employed here.

The accompanying tribal map indicates the location of the major tribes of the East African area as accurately as the scale of the map will allow. It is based on tribal surveys by Meinhof[3] and Schapera[4] and also on positions given by individual ethnologists for the tribes among which their investigations were made. Many of the minor tribes are not represented; in general they resemble their neighbors. For the sake of brevity footnotes have been cut to a minimum. The data are derived from many well-known sources for the area. While no

3 C. Meinhof, *Grundriss eine Lautlehre der Bantusprachen* (Berlin, 1910), map.

4 I. Schapera, *A Working Classification of the Bantu Peoples of Africa* (Man, vol. 29, 1929), pp. 82-87.

FIG. 1. Tribes of the East African Cattle Area (based on Meinhof, Schapera, and ethnographic reports; limits of the area after Herskovits, *Cattle Complex in East Africa*, map, p. 249).

exhaustive search of the literature has been made, it is doubtful that the picture would be changed materially by the inclusion of other records.

DESCRIPTION OF BRIDE-WEALTH AND ASSOCIATED CUSTOMS

The Choice of a Mate. Marriage in East Africa is the concern not only of the two individuals but of their families also; in fact, the families often have more to say than either of the individuals. Where bride-wealth is large a young man cannot ordinarily expect to acquire the necessary goods by himself and must depend on outside sources, logically upon his family or clan; it would be undiplomatic for him to desire a girl of whom his family did not approve. Also, the habit of child or infant betrothal to some extent affects the right of the individual to choose his own mate.

Viewing the area as a whole, individual choice does not seem to be notably less among the tribes which pay the highest bride-wealth. The Nilotic tribes in the north often give a great many animals for a bride, but it is precisely in this region that young couples have the greatest amount of freedom to arrange marriages for themselves, provided they observe the usual prohibited degrees. Parents undoubtedly exert considerable influence, but there is no idea of forcing the young people against their own desires. Even when young girls are betrothed to older men (Shilluk, Nuer, Bari, Lango sometimes, Nilotic Kavirondo sometimes) the girl has a right to refuse when she comes of age should she disapprove of the man selected for her, and any presents or instalments of bride-wealth are returned. Of these northern tribes only the Nuer and Dinka try to force a girl against her will and then only if a brother wishes to marry at once and needs the capital which his sister's marriage will bring.

Immediately south of the Nilotic groups some of the Bantu tribes between Lakes Albert and Edward and Lake Victoria and eastward to Mt Kenya place more emphasis on parental choice (Bahima, Banyoro, Banyankole, Bateso, Bagesu, Nandi) while other tribes of the region allow a young man to pick for himself (Baganda, Bavuma, Sese). The young people's wishes are considered, save by the Banyankole who do not consult the girl. Infant betrothals are apparently not common in this region. The amount of bride-wealth given by tribes where parental choice predominates is about equal to that given where one or both of the individuals is free to choose.

Of the tribes between Lake Victoria and the east coast parental selection is exercised only by the Wachaga to any important degree. Among the Akikuyu, Akamba, and Wagiriama the boy chooses his own bride; and the girl has the liberty to accept or reject suitors. Infant or early betrothals are common, but

the girl is consulted when she matures. As a rule bride-wealth is high and includes many sheep and goats, though perhaps fewer cattle are used than among the tribes mentioned previously.

In central East Africa southward from Lake Victoria to the southern limits of Lake Nyasa the individual has a great deal of freedom (Wanyamwezi, Wagogo, Wahehe, Wayao, Swaheli), but choice is somewhat limited in certain tribes where cross-cousin marriage is expected (Wabena, Babemba). Early betrothals are common, but the individuals are consulted when they reach marriageable age. In general this is a region of lower bride-wealth and fewer cattle.

Parental choice is at its strongest in the southern portion of the area (Angoni, Ba-Ila, Babudja, Mashona, Vandau, Bakwena, Bechuana, Bakxatla, Bavenda, Lovedu, Basuto, Amazulu, Amaxosa), and cross-cousin marriage is commonly prescribed by some (Ba-Ila, Bechuana, Lovedu). A number of the southern tribes allow a boy to choose for himself at least in some instances (Angoni, Mashona, Bavenda, Bathonga, Amazulu, Amaxosa). Many cattle are raised here, and high bride-wealth is customary. Infant betrothal is common, and the girl is seldom consulted and may even be forced against her will (Amazulu, Amaxosa).

Summary of Choice. No special absolute relation seems to exist between the amount of bride-wealth and the amount of freedom allowed the individual in choosing a mate. There is a gradual increase in parental influence on this point from north to south with the exception of some of the central tribes where individual choice is quite as highly developed as in the extreme north. It will be seen that in other traits connected with marriage these central tribes often differ slightly from the typical pattern of the area; more will be said of this later.

Goods Used as Bride-Wealth. Cattle are the most important type of property used as bride-wealth, but they are by no means the only type. Thus, the custom of bride-wealth is not entirely dependent on the presence of cattle or even of large herds of other livestock. Bride-wealth of some sort is paid everywhere in East Africa though in all sections there are some tribes with few or no herds. In the north the Shilluk have poorer pastures than the other Nilotic tribes. Often it happens that most of the cattle of a tribe are in the hands of a few wealthy individuals (Bari, Bantu Kavirondo, Suk, Baganda, Masai, Angoni). The Wanyamwezi, Angoni and Ba-Ila have relatively few cattle, and cattle cannot be raised at all by tribes in the tsetse fly area (Babemba, Wayao, etc.). Most other tribes have adequate herds of cattle. Other livestock raised in the area include camels and donkeys (Turkana), and goats (Shilluk, Dinka,

Bari, Latuka, Lango, Acholi, Turkana, Banyoro, Baganda, Banyankole, Bateso, Kavirondo, Bavuma, Nandi, Akikuyu, Akamba, Masai, Wanyamwezi, Wagogo, Wahehe, Wayao, Ba-Ila, Mashona, Lovedu, Bathonga, Amazulu, and others); sheep are raised by the same groups that have goats but are less important. Honey, bark cloth, cowry shells, hoes, spades, spears, arrows, and in recent years money have all been used for bride-wealth. A man may also substitute work for his parents-in-law either as part of his bride-wealth or more often as a temporary substitute for the goods which he must pay later; the length of service varies from case to case and exerts certain specific influences on the family structure. Most tribes do not limit themselves to one kind of bride-wealth alone, and the possible combinations of goods are legion.

Where cattle are plentiful they always figure prominently in the bride-wealth, and they are often used almost to the exclusion of other property (Dinka, Nuer, Bahima, Banyoro, Banyankole, Bateso, Nilotic Kavirondo, Wachaga, Babudja, Vandau, Bakxatla, Bavenda, Baronga, Basuto, Amazulu). For other tribes goats and sheep form the largest part of the bride-wealth (Bari poorer classes, Latuka, Acholi, Bantu Kavirondo, Agricultural Suk, Masai poorer classes, Akikuyu, Akamba). Goats and sheep are customarily used in addition to a few head of cattle (Shilluk, Turkana, Bari, Lango, Banyoro poorer classes, Bavuma, Nandi, Wanyamwezi, Wagogo, Wahehe, Ba-Ila, Mashona, Matabele, Lovedu, Bathonga). Hoes are next in importance to livestock (Lango, Kavirondo, Wanyamwezi, Wahehe, Babemba, Wabena, Ba-Ila, Mashona, Bavenda, Lovedu, Bathonga, Amazulu). Cowry shells figure significantly among the Baganda and Baziba and are of minor importance in many tribes. Bark cloth is relatively important with some (Bari, Wanyamwezi, Babemba). The other bride-wealth goods enumerated in the preceding paragraph seldom represent the greatest part of the payment.

Bride-service occurs under divers conditions in practically all parts of East Africa. Among the Nuba in the extreme north it does seem to replace property transfer almost entirely, but in the rest of the area it represents a temporary condition and other goods are expected from time to time by the bride's family. Bride-service occurs occasionally in the north (Bari, Lango) and south (Babudja, Mashona, Bavenda); it is especially common in the central area where there are few cattle (Wanyamwezi, Wahehe, Wabena, Babemba). Ordinarily a man does not continue to work for his parents-in-law after one or two children have been born. A Babemba man may serve for as long as seven years and a Mashona man sometimes is not free until a daughter marries and some or all of the bride-wealth received for her is given to her mother's parents.

It is of interest to note the effect of bride-service on the type of residence. In the north this relationship is not so obvious because here a young couple ordinarily live separately for awhile after their marriage, just visiting each other (Nuba, Dinka, Nuer, Bari); patrilocal residence is general after the birth of a child. In the central part of the area bride-service means at least temporary matrilocal residence (Wanyamwezi, Wahehe, Babemba, Wayao). The Mashona and Matabele practise both matrilocal and patrilocal residence. Patrilocal residence is preferred throughout East Africa.

Amount of Bride-Wealth. There is no uniformity in the size of the bride-wealth. Even within each tribe there is a wide range according to the wealth and rank of the two families. The poorest individual in Angoni society may give as little as two dressed skins; a wealthy Nuer may pay sixty head of cattle. In the principal cattle-raising tribes a sum of six to ten head of cattle seems to be average (Shilluk, Lango, Turkana, Banyoro, Banyankole, Bavenda, Amazulu). The Dinka, Nuer, and Basuto consistently pay more; in poor tribes much less is given. Each family and each tribe has its standards, and there is seldom any bargaining or haggling over the amount as there would be in a strictly economic trade. A woman gains status if a large amount has been given for her; the man is admired who pays a high bride-wealth.

Type of Payment. The bride-wealth ordinarily is not paid all at one time except by the very wealthy. In fact payment is often deferred until children are born or even until a daughter marries; in the latter situation the bride-wealth received for the daughter may be used to make her mother's marriage "legal." A fair number of tribes stipulate that all the bride-wealth must be paid before the marriage (Shilluk, Bari, Kavirondo, Banyoro, Baganda, Masai, Vandau, Bathongo, Basuto); others specify a certain portion to be paid either before or at the wedding (Turkana, Akikuyu, Wachaga, Wanyamwezi, Bavenda). The tribes which defer payment until after the birth of a child are located in the northern part of the area (Nuer, Latuka, Turkana). Several of the southern tribes may defer payment until a daughter is married (Babudja, Mashona, occasionally Bakxatla).

Summary of Goods Used, Amount and Type of Payment. As might be expected in this area, cattle are the most important single item of bride-wealth; and tribes with the most cattle pay the highest sums. But where cattle are lacking the custom is still present; substitutes are made—sheep and goats where these are plentiful, hoes which are a special symbol of wealth in this area, bride-service, and

so forth. The emphasis on bride-service by the central tribes sets them apart; this is a region of temporary matrilocal residence, which results in changes in the family organization, making this region slightly different from other sections of the area.

It is apparent that the transfer of bride-wealth is not a commercial transaction. There is seldom haggling over the amount by the two families. Prestige goes with a high bride-wealth, and it is to the advantage of both sides that the amount be as high as possible.

Source and Distribution of Bride-Wealth. A young man of marriageable age often does not have enough capital of his own to afford a wife. He has perhaps earned a few cattle by working for his father or for a wealthy cattle owner, or acquired a few in raids on neighboring tribes, or in recent times he may have earned money in the employ of a white mine or plantation owner. Usually he still does not have enough for the initial instalment. Sometimes the young man must delay his marriage until he can earn the proper capital or until he inherits the widow of his father, brother, or uncle. In general, however, it is the obligation of a father to provide brides for all of his sons and also to see that his daughters have husbands. One obvious source of capital for a man is from the marriage of his sisters. The wealth obtained from the marriage of a daughter is very commonly reserved for a son (Shilluk, Nuer, Nilotic and Bantu Kavirondo, Masai, Wachaga, Wanyamwezi, Wahehe, Swaheli, Vandau, Bahurutse, Bavenda, Lovedu, Bathonga, Valenge, Baronga, Amazulu). Particularly in the south there is a definite feeling that wherever possible the wealth received for a daughter should purchase a wife for a son. Bride-wealth is kept intact as a special fund for this purpose. Thus it happens that a man is often very glad to find a husband for his daughter; the opposite is not always true. Where the bride-wealth, and even the issue of the cattle, are kept intact the wealth acquires the aspect of a special, rather sacred, circulating fund for the one purpose of getting brides. In a sense the fund "equals" brides, and marriage becomes a ceremonial rather than a commercial exchange of the two. Even in tribes where the sense for keeping the bride-wealth intact is not quite so strong, the wealth received for a girl more often than not is used to procure a bride for her brother or an extra wife for her father. Other tribes, chiefly in the north and around Lake Victoria, distribute the bride-wealth among relatives and clan members in a set ratio (Shilluk, Dinka, Nuer, Bari, Lango, Turkana, Banyoro, Banyankole, also Ba-Ila farther south). Usually the relatives who receive a portion of the bride-wealth are expected to supply a similar portion when a young

male relative wishes to marry. The particular relatives who receive or give the most towards bride-wealth are probably determined largely by the relative importance of these kin in the social usages of the tribe. The mother's brother, for example, gives a large share toward bride-wealth of a nephew in some tribes (Shilluk, Lango, Bechuana, Bakxatla, Bathonga, Basuto). The central tribes, who give less bride-wealth and where bride-service is more common, lack the habit of deliberately keeping the bride-wealth intact to use in acquiring brides.

Summary of Source and Distribution. Throughout the area bride-wealth is a family responsibility. The feeling that wealth received for a daughter should be used by a son is common in all parts of the area but especially strong in the south where the fund is actually kept intact for this purpose. In the north this custom is considerably weaker; and bride-wealth is often broken up, but the relatives who receive a portion are expected to supply a similar portion when the occasion is reversed. In this trait again the central tribes show some differences, since a man works out his bride-service without family aid; but the other goods which he must give are collected from his family and go to the family of the girl for general distribution.

Preliminary Visits and Presents. Marriage arrangements are the result of many meetings between the members of the two families, often over a period of years. These visits invariably call for beer or other refreshment which is supplied by one of the families according to set custom. Gifts of considerable value are given in the course of these preliminary meetings. A man betrothed to a very young girl, for example, is expected to give her clothes and in other ways contribute to her support until she is old enough to marry. Gifts may be given by either family at these meetings, but those given by the man far exceed in value those which he receives. The number of formal visits and gifts before marriage is notably less in the north although some tribes hold a betrothal feast at which most of the beer and meat is furnished by the family of the bride-to-be (Nuer, Lango). There is greater emphasis on formal betrothal arrangements around Lake Victoria and eastward to the coast (Bahima, Banyoro, Baganda, Banyankole, Bateso, Akikuyu, Akamba, Wagiriama, Masai, Wachaga, etc.). Generally a small betrothal gift of cowry shells (Banyoro), bark cloth (Baganda, Banyankole), a wire collar (Akikuyu), or similar token is given to the girl, who then gives the boy a small gift to signify their agreement to marry. In addition to this exchange of betrothal tokens more valuable presents are given to the girl in some tribes—several sheep by the Akikuyu, ten to fifteen goats by the Akamba, and so on. Among the central tribes of the area beer is also important; and hoes,

spears, or other gifts are given to the girl's family (Wanyamwezi, Wahehe, Babemba, Swaheli). These gifts, their number and type, are specified by custom. To what extent they are considered refundable in the event of divorce is difficult to tell from the literature; they are usually returned if the engagement is broken for any reason before the wedding has taken place. Particular emphasis is placed on the exchange of betrothal gifts in the southern portion of East Africa. A specified number of hoes or items of similar value must be given (Ba-Ila, Babudja, Mashona, Bechuana, Bakxatla, Bavenda, Bathonga, Amazulu, Amaxosa) plus other items such as firewood for the girl's mother (Babudja, Mashona). The two families exchange gifts at the time of betrothal among the Lovedu, and the groom supplies a special goat to be slaughtered for the feast in the girl's village. In addition to the smaller presents the Amazulu and Amaxosa suitor gives an ox or cow to the girl's parents at the betrothal.

Presents Exchanged at the Time of Marriage. The wedding regularly includes festivities at the homes of both, first at the girl's. Food and drink are served at both places; the amount supplied by either party depends no doubt to some extent upon which home is the scene of the feast, the woman furnishing more at her home and the groom more at his. But there are certain animals designated to be supplied by one or the other for ceremonial slaughter. In the north most of the food for the ceremony at the girl's home is supplied by her family even to the bulls which are to be slaughtered (Shilluk, Nuer, Turkana) although the Turkana man also supplies one bull for the feast. For the festivities at the man's home his family provide beer and at least one goat, and nothing is given by her family. The Lango have a custom which is found more generally among the southern tribes, namely, that of sending an ox back with the bridal party on their return home, to be killed and eaten by the girl's family. Farther south in the area the wedding ceremonies are more elaborate and demand bigger feasts. The groom's party must take a goat or other special beast to the ceremonies at the girl's village (Banyoro, Baganda, Akamba, Masai). For the feast at the groom's home the man's family furnishes the major portion of the beer, goats, and other food. The Banyoro also send a cow back to the girl's village when the bridal party returns home. There is a lack of specific information on the food consumed at weddings among the central tribes; but beer figures importantly and meat is probably less important than in the rest of East Africa. In southern East Africa wedding feasts are quite lavish. For the festivities at the girl's home her father supplies an ox, and the groom is sometimes expected to bring a goat or an ox (Bathonga, Basuto). The man supplies the major portion of the food at his home.

The northern tribes place less emphasis on the exchange of presents during the wedding. The Nuba give a special bark cloth to the girl's mother: this custom of making a special gift to the girl's mother is widespread. It is variously explained by ethnologists and by the natives themselves as a means of thanking the mother for raising the girl, as a compensation to her for losing her daughter, or for her pains at childbirth; other tribes consider it a special thanks to the mother for guarding her daughter's virginity. Other Nilotic tribes give rings, spears, or bracelets to the bridal party at the time of the wedding (Nuer, Bari, Lango), and the Lango bridal party in turn give small presents to the groom's party. Much more emphasis is placed on gifts at the time of the wedding by tribes around Lake Victoria and eastward, and the idea of a special gift to the bride's mother is, as noted, common (Baganda, Masai, others). It is the girl's (paternal?) aunt who receives a special cow among the Banyoro rather than her mother. The bride herself receives goats, bark cloth, or other presents at the wedding. Bananas, rings, beads, honey, and other objects of like value are given to the bride's family (Banyoro, Baganda, Banyankole, Akamba, Masai). As with the betrothal gifts it has been difficult to determine to what extent these presents are returnable in the event of a divorce. The special gift to the mother is apparently never so returned. In some of these tribes small gifts are presented to the groom or his family, but they never equal those given by the groom. Among the southern tribes the idea of a special animal for the girl's mother is highly developed (Bavenda, Lovedu, Amazulu), and here there is a more or less continuous exchange of gifts between the two families throughout the wedding.

Among most of the tribes of the East Africa area an important feature of the wedding is the trip taken by the bride to her new home in the man's village. This is not a necessary part of the ceremony, of course, for those groups which practise temporary or permanent matrilocal residence. The bride always appears reluctant to leave her old home; and she must be bribed to make the trip by a series of gifts, often representing considerable value. She shows the same spirit of reluctance in her husband's village at certain specified moments; and further bribes are sometimes offered her before she will enter her husband's hut, sit down on a mat opposite him, or eat with him. The most widespread feature of this reluctance is a hesitancy on the part of the bride upon entering her husband's village or hut (Turkana, Banyoro, Baganda, Nandi, Akamba, Matabele, Valenge, Basuto, Amazulu). In other tribes the girl hesitates at all three points mentioned above (Baganda, Suk, Wanyamwezi, Valenge, Amazulu). The bribes may consist of one or two cattle, goats, cowry shells, or hoes. They may go directly to the bride or, particularly in the south, to the young girl who

is her special attendant. Around Lake Victoria cowry shells, beads, or rings are often given to the bridal party at places along the road between the two villages (Banyoro, Baganda, etc.); among the Banyoro these go chiefly to the bride's paternal aunt who accompanies her.

Summary of Property Used in Addition to Bride-Wealth for Betrothal and Marriage. Since marriage arrangements are a matter of years of visits and meetings between the two families much property in the form of gifts and food changes hands. The value of the goods given by the groom always exceeds that of the goods given on the woman's behalf. As might be expected, the tribes which have the biggest weddings and the greatest amount of formality give the most presents. Thus, there is an increase in the value of gifts from north to south in the area, with the exception of the non-cattle-raising central tribes. It is customary for the couple to exchange small gifts as a token of their agreement to marry. After this most of the giving is by the man, but food and beer are often supplied by the woman's family.

At the wedding the same holds true for the direction of property flow, the majority of the gifts coming from the man. Food is contributed by both families, by the woman's in her village and by the man's in his village with the exception of certain ceremonial animals. Where the trip made by the bride to her husband's village is an important ritual more presents are demanded of the groom.

Of the gifts given before the wedding most are considered returnable if the engagement is broken. Wedding gifts may also be returned at the time of divorce although certain ones, especially the gifts to the bride's mother, can never be returned.

Goods Brought by the Bride. A bride generally brings certain property with her to her new home. However, the value is disproportionately small in comparison with the amount of bride-wealth given for her. This is especially true in the north where a girl brings only a few household utensils and perhaps some meal (Nuba, Dinka). Women in the central tribes also bring only a few household utensils to the new home. Of the other tribes a Nandi bride brings a cow, a Banyankole girl several cows, the Baganda a large quantity of cowry shells, the Wachaga several goats; and in all the southern cattle-owning groups a girl brings at least one cow which is believed to represent her family spirits in the new village. Nowhere in the area is the amount equivalent to anything like a dowry.

To summarize, a bride is expected to bring to her marriage only such goods

as she wishes to use in her new home. The value of the property bears no relation to the size of the bride-wealth given for her. Even when the girl brings livestock with her, the feeling is that she continues to own these herself, and they represent her family in the new village.

Divorce. It has been suggested by some that the main function of bride-wealth is to stabilize the marriage union. A general study of the tribes of East Africa does not bear out this contention since divorce rates are equally high among tribes with high bride-wealth and those with very low bride-wealth; but it is of interest to note what happens to the bride-wealth in the event of divorce. In most cases the man expects to have the property refunded, and in some tribes he even insists on having the original goods rather than substitutes. He often demands any issue of the livestock also. The number of children the woman has borne, the question of blame, and other considerations complicate the matter of refund, however. Children have the greatest effect on the settlement, and ordinarily no refund at all is made if the man keeps the children (Dinka, Nuer, Shilluk, Akikuyu, Akamba, Wachaga, Amazulu, Amaxosa), or a partial refund may be made with a specified number of the wealth goods held back for each child (Shilluk, Bari, Akikuyu, Mashona, Amazulu). Some of the central tribes allow a full refund even though the man keeps the children (Wanyamwezi, Wahehe). Other central groups that use less bride-wealth make no actual refund. It would be rather difficult to return the service a man has given, and since the idea of keeping the bride-wealth fund intact is not well developed here, the goods are not available for return (Babemba, Wayao, Angoni). In many instances the settlement depends upon which party is at fault. The Nuer grant a full refund if the woman is at fault but keep a cow and a bull if the man caused the trouble. If a woman runs away from her husband he may try to entice her back with gifts; if this fails, the bride-wealth is refunded, although here again it may depend on the number of children. Sometimes no goods are returned until the woman remarries.

Children. The importance of children in East African marriage cannot be overemphasized. As has been seen, the refundability of bride-wealth at divorce depends largely on the number of children. Children are economically desirable to tend fields and herds and religiously desirable to care for the ancestral spirits of the family. The ownership of children is therefore a matter of great concern. Ownership is implied in the payment of bride-wealth by which a man acquires a wife and especially her reproductive powers. In the northern part of the area, where bride-wealth is commonly completed before marriage, a man auto-

matically owns his children as they are born (Shilluk, Bari, Bantu Kavirondo, Banyoro, Baganda, Banyankole). Sometimes here a special payment is made to the wife's family at the birth of each child (Bari, Latuka, Lango, Akamba, Wachaga). The opposite holds true for the Akikuyu where it is customary for the woman's father to give back three of the marriage goats after the birth of a child. Among the central tribes a man acquires full control over his children only after he has completed payment of the bride-wealth (Wabena, Babemba, Wayao). Since these tribes have matrilocal residence the wife's family has a great deal of influence over the children. In the southern part of East Africa there is a feeling that the children belong to the woman's family until the full bride-wealth has been handed over, so that a man sometimes has no legal control of his children until one of his daughters is married (Babudja, Vandau, Bechuana, Bakxatla, Bavenda, Bathonga, Basuto, Matabele, Amazulu).

The fact that barrenness in a woman and at times sterility in a man are grounds for divorce is further evidence of the value of children in the marriage contract. Some tribes are more lenient than others with a barren woman. She may be retained as a wife, but usually some of the bride-wealth is returned (Shilluk, Lango, Nandi, Banyoro, Banyankole, Masai, Amaxosa). Most East African tribes despise a barren woman, and a substitute must be given by her family or the bride-wealth returned (Dinka, Nuer, Suk, Akikuyu, Wachaga, Wahehe, Wayao, Matabele, Ba-Ila, Mashona, Vandau, Bechuana, Bavenda, Lovedu, Bathonga, Swazi, Basuto, Amazulu). Again it is the southern tribes that are strictest in this as in other matters connected with marriage. Male sterility is cause for divorce among the Wachaga, Wahehe, and Babudja. In some other tribes a relative of the man is appointed to have children for him (Dinka, Nuer, sometimes Bavenda).

When a woman dies childless the matter is treated as in the case of barrenness, that is, either the bride-wealth is returned or a substitute is sent by her family. Sometimes the man has no right to demand a substitute or a return of the bride-wealth, but his parents-in-law may do one or the other if they are especially fond of him (Bari, Akamba). A refund or substitute is obligatory in most other tribes (Shilluk, Dinka, Nuer, Lango, Kavirondo, Nandi, Akikuyu, Mashona, Vandau, Amazulu). Unfortunately information is lacking on this point for most of the central tribes.

It is the duty of a wife to bear children for her husband as long as possible. Even if her husband dies she may go on bearing children who will belong to the deceased for all legal purposes (Dinka, Nuer, Akikuyu, Akamba, Bechuana, Bavenda, Swazi, Basuto, Amazulu, Amaxosa). No mention is made of this

practice among the central agricultural tribes nor does it occur among the Bari or Lango. In these tribes the new husband is considered to be the legal father of any children born after the death of the first husband.

The division of children in divorce cases has been hinted at in the discussion of divorce. The woman keeps the children among the Nuba and the Wayao. Generally, if a full refund of the bride-wealth is made, the children go with their mother (Shilluk, Dinka, Nuer, Lango, Wachaga, Akamba, Amazulu). In other tribes no refund of the bride-wealth is made if the man keeps the children (Wanyamwezi, Wahehe, Wabena, Amaxosa). With the Angoni the children are kept by the party least at fault in the divorce. If a woman runs away, in some tribes her husband keeps the children and also receives a refund (Swazi, Amazulu, Amaxosa).

Summary of the Role of Children. It is seen that children are perhaps the most important feature of East African marriage in their effect on bride-wealth, and the relationship between the two is uniform throughout the area. A man owns his children only after he has completed payment of the bride-wealth. Barrenness in a woman is almost a sin, and even if she is not divorced a substitute or at least a partial return of the bride-wealth is expected. Impotence on the part of a man is not quite so severely penalized; but it, too, often calls for divorce or the appointment of some relative as a substitute. Bride-wealth and children are also closely related in the arrangements made in divorce cases. If no refund is made, the children remain with the man; if a refund is made, they go with the woman. There are few exceptions to this rule.

Effect of Death on the Marriage Contract. The death of one of the individuals does not necessarily terminate the marriage relationship between the two families. The exact role bride-wealth plays in this is difficult to determine since levirate, sororate, and filial and nepotic widow-inheritance are shared by so many groups all over the world whether any sort of bride-price is paid or not. In East Africa bride-wealth does play a part in the fate of widows. Normally a widow is inherited by her husband's brother, a son, or a nephew, although she may be quite free to choose which of these men she wishes. But in some tribes the widow may return home if she prefers, and part or all of the bride-wealth is returned to her husband's family (Dinka, Nandi, Banyoro, Baganda, Wahehe, Akikuyu, Babemba, Vandau, Bechuana, Bavenda, Amazulu).

A widower among the Nilotic tribes apparently has no special claim on his wife's family for a second wife or return of bride-wealth unless the first wife was childless. In other tribes a widower is given a sister of his first wife

(Wahehe, Ba-Ila, Lovedu, Bathonga); he may give a small payment for her, but this is always much less than the original bride-wealth.

Polygamy and Bride-Wealth. Since the ratio of males to females at birth is approximately equal the world over any system of plural spouses is bound to upset this balance. If polygyny is the general rule there will be more males of marriageable age than there are available females at any given time. Actually, however, the outlook for a young man is not as bad as it appears at first glance. A man may, of course, inherit a wife from an older relative. But it is also true that polygyny is often the exception rather than the rule, and only a few wealthy individuals will have more than one wife (Bari, Banyoro, Banyankole, Bateso, Wanyamwezi, Babemba, Wabena, Wayao, Ba-Ila, Bechuana, Amazulu, Amaxosa). In tribes where polygyny is more common the usual number of wives is two or three (Shilluk, Turkana, Baganda, Wagogo, Wahehe, Vandau). Bride-wealth has the effect of limiting polygyny. Tribes that are poor or where the amount given is exceptionally large cannot afford polygyny.

The practice of sororal polygyny does not seem to affect bride-wealth, and the same amount is given for a second sister as for the first (Shilluk, Baganda, Lovedu). Some of the tribes in East Africa do not allow sororal polygyny (Nuba, Nuer, Akamba, Masai).

CONCLUSIONS

The foregoing description of bride-wealth and connected traits shows that East Africa is not entirely uniform. Significant changes in marriage customs are noted from north to south in the area, with some of the central groups showing further variations on the theme. This is apparent in the varying emphasis placed upon the traits of the complex in the several sections of the area. The southern tribes are invariably stricter and more highly formal in adhering to the complex —family rather than individual choice is the rule, weddings are lavish affairs preceded by many ceremonial visits between the two families, and the goods of the bride-wealth are special and separate from goods used in any economic exchanges. Tribes of the extreme north, on the other hand, allow the individual considerable freedom in arranging his marriage, betrothals and weddings are less formal, and the goods of the bride-wealth are not so frequently kept intact or considered "special." The tribes of the Lake Victoria region resemble more closely the groups in the extreme south. But the non-cattle-raising tribes between Lake Victoria and the Limpopo River present a different aspect; here bride-service and matrilocal residence alter the picture.

The most unvarying trait seems to be the tremendous importance of children

and their role in the bride-wealth payments. This may be tied up with the great importance of family perpetuation and care of ancestral spirits. It is a real sin not to have children, and sterility is everywhere despised. An individual must have children and grandchildren and great-grandchildren. Therefore a family is obligated to arrange marriages for all its offspring. A family needs husbands for its daughters so that sons may obtain wives, and all marriages must be productive so that the family spirits will never be neglected. Children have a direct bearing on bride-wealth. Without them payments are withheld or the marriage is dissolved and the wealth returned. And in divorce, refund is in direct proportion to the number of children and their division between the two families.

In other traits there is a more definite division between north and south, with the tribes from the shores of Lake Victoria southward somewhat intermediate. Large sums are given at both extremes of the area; but in other aspects the north lacks the clearly defined formalities of betrothal and wedding. It seems that the typical East African bride-wealth complex centers among the southern tribes, becomes less elaborate among the northern Bantu tribes of the central area, and most divergent among the Nilotic tribes that appear to have received influences from other areas. To determine the real essence and significance of East African bride-wealth it is necessary to examine the custom most closely in the southern part of the area.

Everywhere the actual bride-wealth has economic value. However, it is not essentially goods-in-exchange. Wives are not bought. Wives can never be resold, and in its most typical form the bride-wealth cannot be used to buy ordinary products. The desire on the part of the woman to have a large bride-wealth given for her is not so much a desire to command a high price for the price's sake as it is the desire to gain status and prestige. The man's desire is the same when he tries to give as large a sum as possible.

The present study cannot demonstrate any reason for the origin of the bride-wealth complex. That the custom arose for the sole purpose of stabilizing or legalizing marriage seems absurd, though, once established, it may well have served as a stabilizer. Nor does it seem that bride-wealth creates social relationships between the marrying families; rather it reflects social usages already established. Further, the presence of some type of valuable property itself may well be a necessary prerequisite to the origin of such a complex, but once the custom is established it does not depend on great supplies of wealth. Less valuable items may be substituted for the cattle and other livestock though with some weakening of the complex.

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THE USE OF GENETICALLY DETERMINED CHARACTERS, ESPECIALLY SEROLOGICAL FACTORS SUCH AS RH, IN PHYSICAL ANTHROPOLOGY

WILLIAM C. BOYD

IF WE WISH to study physical anthropology objectively, we must avoid repetition of a mistake which seems to have been regrettably common in the early days of the subject. The early physical anthropologists seem to have taken over, to a large extent, the concepts of race which were currently held by the layman, and attempted to find, by skull measurements and other such devices, significant differences between individuals belonging to these predefined "races." A truly scientific approach would surely have been different. One would first inquire what meaning, if any, could legitimately be given to the word "race" and second, what characteristics of the human species, if any, exist, which can be readily and objectively determined, which will aid in setting up racial categories. It is the purpose of this paper to make such an attempt.

People have loosely referred to the "English race," the "French race," the "Jewish race," and the "African race," ignoring the fact that these groups of mankind may differ much more among themselves than typical examples will differ from other examples of a different race. The tragic results of misuse of the word "race" in recent times have been well summarized in the book by Ashley Montagu.[1] As Montagu points out, unscrupulous politicians, taking advantage of the unthinking idea so common in the laity of the present day that "of course, they know what races are," have made use of these ideas of race for their own ends, and have not hesitated to kill and torture millions of people in the name of "race."

Montagu points out that the modern conception of race is of recent origin, and did not exist in the world of antiquity, or even in the modern world until the latter part of the eighteenth century. The ancient Greeks and Romans referred to those outside of their capital cities as barbarians, but they did not imply by this that the barbarians belonged to separate races, but simply to different geographic groups. The Greek city states, though they were often at war with each other, did not consider that their inhabitants belonged to different races.

1 M. F. Ashley Montagu, *Man's Most Dangerous Myth: the Fallacy of Race* (2nd ed., New York, 1945).

Even in India, where a rigid caste system was set up, the concept of race as an immutable physical entity as we know it today did not seem to exist.

Montagu believes that it was not until opposition developed against the slave trade in Negroes that the supporters of slavery, anxious to find some new reason to controvert the powerful arguments urged against them, hit upon the argument of race. The slaves (the dealers said), since they came from an inferior race, were certainly not as good as their masters and deserved nothing better than slavery.

It is likely that the word race is derived from a root which implies "things having a common origin" and the introduction of the idea of separate races among men implies the idea of diverse origin of the different races. A glimpse of this is found in the Bible when the sons of Noah—Ham, Shem, and Japeth—are supposed to be the fathers of the various races of mankind. Actually, relatively little is known of the ultimate origin of the present human populations, and another more modern idea that the Negroes of Africa were descended from gorillas, Europeans from chimpanzees, and so forth, has been largely abandoned. However, the tendency to suppose that originally "pure" human races once existed seems to be almost an instinctive one and apparently does not depend entirely on tradition. The mathematician Bernstein, for instance, in one of his early papers on blood groups, postulated the original existence of three pure races, one belonging to blood group A, one to blood group B, and one to blood group O. The modern blood group distribution was supposed to be the result of various degrees of mixtures of these primitive pure races. Subsequent research has not brought forward evidence that any such primitive serological races ever existed. Other workers have been led to postulate the existence in antiquity of a pure Aryan race, a pure Mediterranean race, or a pure Alpine race. All seem to have been inclined to avoid at all costs the unpleasantness of facing the possible fact that all primitive men, although not so large in numbers, may have been nearly as diverse, if not more so, in physical characteristics as mankind of the present time. The *reductio ad absurdum* of this tendency has been pointed out by Haldane[2] who mentions that, if it were carried to its logical conclusion, we should have to suppose the existence of an originally pure red-headed race to account for the red-headed people who exist in the world.

Modern anthropologists, of course, have not been unaware of the possible dangers involved in taking over the common man's ideas of race and incorporat-

2 J. B. S. Haldane, *Anthropology and Human Biology* (Comptes Rendu, Congrés International des Sciénces Anthropologique et Ethnologiques, First London Session, pp. 53-64, 1934).

ing them in anthropological treatises. Thus, Professor Hooton[3] deplores the use of such terms as the "Jewish race," the "Latin race," the "white race," and the "Irish race," because they seem to imply a matter of skin pigmentation, of religion, of language, or of geographical position, or perhaps only of temperament. Hooton believes that the proper criteria of race are physical characters. He has offered his own definition of race, which runs as follows: A race is a great division of mankind, the members of which are individually varying and which are characterized as a group of certain combinations of morphological and mensurable features, specifically non-adaptive and which have been derived from a common descent.

This definition, though superior to some of the earlier ones which were offered, does not avoid all possible objections, since: (a) The characteristics which differentiate race are assumed without proof to be non-adaptive, that is, without selective advantage or disadvantage in the evolutionary sense. In the new edition (1946) of his book, Professor Hooton has evidently abandoned this view, and we shall see that the reverse is probably true. (b) Races are supposed to be groups of individuals of *common descent* and this leads us again back to the idea of originally pure races, each differing from the other. The so-called secondary races are supposed to have been produced by mixture.

It is rather amazing that any contemporary physical anthropologist should continue to regard the characteristics by which we differentiate "races" of mankind as non-adaptive, since the distribution of pigmentation, for instance, clearly indicates that it is adaptive, that is, that it has selective value, and the comparatively recent increase of brachycephaly in Europe can best be accounted for on the basis of selection. Nevertheless Howells[4] takes this point of view. Dobzhansky[5] states that this amounts to rejecting the simplest hypothesis which would account for racial differentiation, namely that it has been brought about, in part at least, by a natural selection of genotypes which, in the existing environment, have adaptive values higher than those of other genotypes.

A number of other definitions of race have been offered by anthropologists of the past and present, but instead of considering them we may consider the sense in which the term is used by biological scientists in general. Biologists do not find the term so embarrassing as do many modern anthropologists, and among them there is not the same tendency to give up the word and substitute some more

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3 E. A. Hooton, *Up from the Ape* (New York, 1932).

4 W. W. Howells, *Mankind So Far* (New York, 1944).

5 T. Dobzhansky, *On Species and Races of Living and Fossil Man* (American Journal of Physical Anthropology, n. s., vol. 2, pp. 251-265, 1944).

ambiguous term such as ethnic group. Apparently it is easier to be objective about races of insects than it is about races of man.

If we attempt to define the term race scientifically, one of the first preconceptions which most laymen must get rid of is the idea that some one physical characteristic will be enough to differentiate all the races, one from another. For example, there are ignorant people who believe that Negroid ancestry in people of mixed white and Negro ancestry will lead to their always showing black or dark pigment underneath their fingernails. Other people believe that skin color or the possession or lack of wavy or kinky hair will enable a complete race classification to be set up. Of these ideas we need only say that, in the first place, experiments have proven them to be unfounded, and in the second place, a study of the very great diversity of human types shows that no one criterion can be expected to be enough to mark off mankind into racial groups which are at all characteristic of the areas in which they are found.

The anthropologist of the past has placed great weight on the type of hair, whether straight, wavy, or kinky, and so forth. Such a classification, except for the important qualification that we do not know the exact mechanism of the inheritance of the various hair forms, is perhaps as satisfactory as any type of classification based on a single characteristic can be. But as soon as we include the whole population of the world in our classification, strange contradictions and inconsistencies begin to appear and we find that we are obliged to classify some of the Australian aborigines (who have certain other characteristics which might seem to make them closer to the Ainu or even to the white races of Europe) with the natives of southern Africa, simply because of their curly head hair. At the same time, we are forced to classify many of the inhabitants of India with the natives of central Asia and the aborigines of North America because of the complete lack of wave of their hair.

It may be taken for granted that we do not wish to base our classification of races upon characteristics that are purely environmental, that is, determined solely by the surrounding conditions in which the person lives, but that we wish to use characteristics which are hereditary and may be transmitted to the descendants. A little study of genetics will convince us that if we do this there is no possibility of recognizing today originally pure strains, even if such had ever existed. The twenty-four pairs of chromosomes possessed by man segregate independently in reproduction, and in addition there is always the possibility of crossing over between pairs of chromosomes. These agencies will soon mix up any genes possessed by a pure race to such an extent that it is very unlikely that the ancestral type will emerge more than very rarely in a population descended

partly from this race but mixed with some other. This was pointed out by East and Jones in 1919.[6] They said:

> Traits originally characteristic of certain people because of isolation accompanied by inbreeding have been shifted back and forth, combined and recombined. Even if it were known what the average values of these early strains were, there is little reason to believe that the present day individual, bearing one or two particularly striking traits, should be felt to hold any closer relationship to the strain in which these traits are supposed to have originated that his neighbors who are without them. . . . It is positively misleading therefore, to classify Englishmen as resembling Danish, Norman, Pictic, Celtic, or Bronze Age types, as is done in more than one work of authority.

We are now in a position to ask what is the definition of race used by biologists and particularly by geneticists. It might be carelessly supposed that the genetic definition of race would be that it was a group of individuals all with identical genetic constitutions. Dobzhansky and Epling,[7] however, point out that such groups of individuals are simply never found, for there is much genetic variation within the confines of every race, and if we were to restrict our definition of race to this simple definition, in the long run every single individual would have to belong to a race of which he was the only member. These authors also point out that it would be equally fallacious to define a race as a group of individuals having some single gene in common, or some chromosome structure in common, since so many variable genes and chromosome structures exist and since these different genes and chromosome structures form a large variety of combinations. Dobzhansky and Epling propose to define different races as populations belonging to the same species which are characterized by different frequencies of variable genes and/or chromosome structures. In the ideal case, of course, one would have to take account of all of the variable genes and chromosome structures in order to define a given race. At present we are quite unable to do this, even in the lower forms such as *Drosophila* where the genetics are fairly thoroughly understood, and we are much farther from it in the case of man.

We next have to decide how much difference there has to be in the distribution of the known variable genes and chromosome structures between two populations before we decide to call them two different races. This turns out to be to a large extent an arbitrary affair. Dobzhansky and Epling point out that statistically significant variation may occur between populations of *Droso-*

6 E. M. East and D. F. Jones, *Inbreeding and Outbreeding* (Philadelphia, 1919).

7 T. Dobzhansky and C. Epling, *Contributions to the Genetics, Taxonomy and Ecology of Drosophila pseudoobscura and its Relatives* (Washington, 1944).

phila in localities only a dozen miles apart and sometimes even in populations which are only a fraction of a mile apart. We could if we liked say that these populations were racially distinct. If the concept of race is to be useful, however, we must restrict the looseness of the term somewhat or otherwise we shall find that the term will lose all of its value for purposes of classification.

It is pointed out by Dobzhansky and Epling and by Huxley[8] that when variations in gene frequency or in chromosome structure are examined it may often be found that variation is very gradual from one population to another. The populations at the different ends of such a gradient may be profoundly different in genetic constitution and if we had them alone to consider we would unhesitatingly call them races. The decision whether or not to break up the whole population into two or perhaps more races is one which is guided by considerations of expediency and nothing else. In favor of our doing so there is the advantage of having simple reference names which apply to certain populations. Against this step there is the argument based on the difficulties caused by the presence of populations which are intermediate between the arbitrarily designated racial types.

Dobzhansky and Epling note that in some cases the gene frequency gradient is sufficiently steep that the numbers of individuals intermediate in type is relatively small and thus we are quite justified in such cases in breaking up the population in different races. The mean differences between these populations may not necessarily be any greater than those between the end members of a continuous population chain, but we feel happier about the situation because there are so few individuals belonging to the intermediate type. More than one gene frequency and more than one chromosome difference may be employed in our setting up these racial differences.

It may be worth mentioning at this point that we should not confuse the use of gene-markers in space with the use of gene-markers in time. That is, if the frequency of a certain gene were known for a large number of populations at various periods in the history of mankind (something we do not as yet know), the isogenes (lines connecting points where equal gene frequencies were found) would not be likely to be the same at different periods. The theory of Candela, discussed below, of the mode and time of introduction of the blood group B gene into Europe, will illustrate this point.

The advantages of using genetically determined factors in the classification of races are several. In the first place, we know that the factors are hereditary

8 Dobzhansky and Epling, *op. cit.*; J. Huxley, *Evolution, the Modern Synthesis* (New York and London, 1942).

and are therefore not entirely or even largely determined by environment. If they are affected by environment we are usually able to ascertain the extent and manner of this effect. Second, it enables us to make a *quantitative*[9] estimate of the difference between two different races by comparing their gene frequencies. Third, it enables us to predict accurately the result of mixture in various proportions of races which we consider different. Fourth, it enables us to be entirely objective in our criteria of race and not to depend upon the facial appearance, the expression, the gestures, the language, or the cultural characteristics of an individual, all of which have too often influenced the judgment of anthropologists of the past. By this, of course, there is not implied any disrespect for the enormous achievements of cultural anthropology in recent years. As a guide through the difficult crisis through which mankind is now passing it is without doubt more important than physical anthropology. However, culture and race are not the same and we must beware of confusing them.

In classifying mankind we have at our disposal only a relatively small number of genetically determined differences. Some genes, such as those causing color-blindness and polydactyly, are too rare in all the human populations we know to be useful for such classification, because an impractically large series of individuals would have to be studied in order to find significant differences between different races. Color-blindness suffers further from the fact that it is a sex-linked characteristic and therefore our studies would be essentially limited to males. Other rare genetically determined factors, such as inherited abnormalities of the eye, are also not useful for our purposes. The most useful genes known at present are the blood grouping genes, which fall into three main groups: (a) the classical Landsteiner blood groups O, A, B, and AB with their subgroups,[10] (b) the M, N types of Landsteiner and Levine, and (c) the Rh series of genes which have been worked on by Landsteiner, Wiener, Levine, Taylor, Race, and others.[11] Important and significant information about racial differences based on these characteristics, all three of which seem to be inherited as allelomorphic genes on different chromosomes, has been accumulated. Certain early attempts were made to delineate human races on the basis solely of the blood group frequencies determining the O, A, B, and AB groups.[12] These

9 W. C. Boyd, *Critique of Methods of Classifying Mankind* (American Journal of Physical Anthropology, vol. 27, pp. 333-364, 1940).

10 W. C. Boyd, *Blood Groups* (Tabulæ Biologicæ, vol. 17, pp. 113-240, 1939).

11 Cf. W. C. Boyd, *The Rh Blood Factors; an Orientation Review* (Archives of Pathology, vol. 40, pp. 114-127, 1945).

12 R. Ottenberg, *A Classification of Human Races Based on Geographic Distribution of the Blood Groups* (Journal, American Medical Association, vol. 84, pp. 1393-1395, 1925);

proposals have been largely discarded by physical anthropologists, for two main reasons. In the first place, the racial criteria then proposed cut rather cleanly across the racial categories which had been defined already on the basis of morphological and craniometric measurements. In the second place, further studies made it clear that the differences between different races in respect to these gene frequencies were not as clear cut as had been supposed at first. The situation had been over-simplified. The time-worn, but still often repeated, statement that the North American Indians all belong to blood group O is an example. It was not only found not to be true, but actually some North American Indians possess more blood group A than any peoples of European stock. A third factor contributing to the neglect of these early notions seems to have been the fact that the blood grouping genes affect, so far as we know, only hidden characteristics of the blood, ordinarily detectable only in the laboratory, and that these are much less striking to the man in the street, and even to the professional anthropologist, than are characteristics such as skin color, hair color, eye color, stature, shape of the head, and so forth. Nevertheless we must remember that to the geneticist, one gene is as good as any other.

Therefore, in order to show how the use of the blood grouping gene frequencies would enable us to classify mankind into races, I am going to assume a hypothetical situation where things are entirely reversed. I am going to make the assumption that the blood grouping genes in some hypothetical world affect, not obscure characteristics of the blood, but prominent morphological and pigmentation characteristics. I shall over-simplify the picture considerably, and shall not even take advantage of the known intermediate genes and gradations which have been found in the serological series, and shall not allow for any possible environmental effects. Even so, I think the picture which will emerge will be a striking one. Let us suppose that the gene A produced in general a rather dark brown skin, that the gene B produced what is ordinarily called a yellow or Mongoloid skin color, and that gene O produced the color of skin, perhaps not exactly white, even in the loose sense in which that term is used by so many people at present, but a skin color somewhat similar to that often found in people around the Mediterranean area, in Arabia, and so on. The way in which the A and B genes, when both present together in the genotype AB, would interact to produce skin color would of course depend upon the actual

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L. H. Snyder, *Human Blood Groups: Their Inheritance and Racial Significance* (American Journal of Physical Anthropology, vol. 9, pp. 233-263, 1926); L. H. Snyder, *The "Laws" of Serologic Race-Classification: Studies in Human Inheritance, IV* (Human Biology, vol. 2, pp. 128-133, 1930).

mechanism of their actions on the organism, the enzyme systems which they controlled, and so forth. Since our situation is purely hypothetical we may make any assumptions we like, and we shall probably do better to make one of the simpler ones. Let us suppose that individuals of the genetic constitution OO, which in the actual world causes them to possess the properties which we know as blood group O, would possess in this imaginary world a skin color about that of the Spanish, Italian, or light Arab degree of pigmentation, but those possessing gene A were somewhat darker in appearance and those possessing gene B were somewhat dark yellow, such as certain Mongoloids of today, and that those who possessed the genetic constitution AB were rather dark, but not actually black, in color. The genotype AO would be a brown lighter than AA, and the genotype BO would be browner and less yellow than the genotype BB.

If skin color were mainly determined by such a simple mechanism as this, we should find, of course, that our various races would be "polymorphic" for skin color. This might discourage some of the older anthropologists, who, it is clear from their writings, thought that all individuals of a given race should be exactly alike in regard to the characteristics used in racial classification. Nevertheless a brief examination of the facts will show that in actuality present day races are in fact often polymorphic for skin color, and for other characteristics such as cranial index which are used by the physical anthropologist. In fact this accounts for the extensive use of means and averages in physical anthropology. The epicanthic fold, supposedly a Mongoloid characteristic, is found to some extent in Europeans and is by no means always found in the Mongoloid aborigines of North America. Polymorphism in regard to other characteristics, such as eye color, in individuals regarded as belonging to the same ethnic group exists, and is hardly even commented on.

Let us go on to suppose specific effects for the M and N genes. Let us imagine that the effect of possession of gene M was generally the production of a tall individual whose stature in the male we may suppose would range from 158 to 172 centimeters. Let us suppose that the gene for N resulted in short individuals with a height in the male varying from 148 to 158 centimeters. Let us suppose that the heterozygote MN would be intermediate in stature.

The Rh series of genes is very complex and we may restrict ourselves here to the assumption that the Rh negative gene, which is possessed by about 60 percent of persons of European stock, acted as a dominant and produced an eye structure similar to the Mongolian epicanthic fold.

Now let us consider what sort of race classification would result from these

simple assumptions. There can hardly be any doubt that physical anthropologists confronted with such a situation would have considered the racial differences very striking, and certainly from the point of view of those physical anthropologists who were writing fifty years ago, very satisfactory. In western Europe individuals varying in skin color from brown to dark brown would predominate, but the dark brown would be relatively uncommon. In Asia and related regions individuals of a rather dark yellow color would be the common type, with a certain mixture of brown and dark brown. The frequency of very dark individuals would be at its height some place in central Asia. There would be good evidence that the yellow skin color found occasionally in Europeans had been brought by direct migration from Asia. There would be a fairly high incidence of very dark brown individuals in certain parts of Africa. The lightest colored skin in the various races of man would be found in western Europe and certain parts of central Europe, in certain Pacific islands, among the Australian aborigines, and among certain tribes of North American and South American Indians.

All of the Indian tribes of both the Americas would agree in being considerably taller than the average in the rest of the world, whereas the aboriginal inhabitants of Australia would agree in being distinctly shorter than the average. These differences would be considered very marked.

Another notable observation would be that only in Europe and in the modern inhabitants of America (and possibly in some parts of Africa) would the Mongolian eyefold be observed to any extent. It would therefore be considered quite proper to mark off the European race as being absolutely distinct from all the other races of the world because of this striking morphological characteristic. Physical anthropologists in our hypothetical world would hardly have hesitated to classify mankind more or less as follows: (1) the European race, characterized by relatively light color and the presence of the epicanthic eyefold; (2) the Asiatic race, characterized by the predominance of yellow individuals and not having the epicanthic fold, but of the same average stature as the European race; (3) the primitive American race, characterized in general by tall stature, no epicanthic fold, and varying from tribe to tribe in skin color in a characteristically "patchy" way; (4) the Australian race, of relatively light colored people, without any epicanthic fold but practically pygmies in stature; (5) an African race, characteristic of the equatorial portion of Africa, might also be distinguished. It would be dark, although somewhat lighter than the typical Asiatic, and would have the epicanthic fold to a less extent than Europeans.

The European and Asiatic races would not be perfectly separated, but connected by a series of "clines"[13] or intermediate types, in eastern Europe and Russia. This would be easily explained, however, as the result of repeated Asiatic invasions and migrations which had taken place in prehistoric or early historic times. Questions might arise as to why certain individuals from southeastern Africa should be so light in color but the answer to this might depend a good deal on the region in which anthropologists in our hypothetical world supposed mankind to have originated. We should also have to face the question of why the aborigines on the American continent were so tall, and why the Australian aborigines were so short. Archaeological evidence would indicate that the people who migrated to America came across the Bering Strait region and were on the whole of medium height. In the early days of physical anthropology in our hypothetical world a good deal of loose speculation on the effect of climate on the genes affecting height might be indulged in, but as the science of anthropology advanced, such speculations would be frowned upon, for anthropologists would begin to insist that the only valid characters for racial classification were those which were non-adaptive and therefore not affected by the environment.

The possession of the epicanthic fold by Europeans and their North American descendants of today would also be somewhat of a puzzle. One would be obliged, presumably, to suppose that the gene was the result of a mutation, or of early mixture of the Europeans with some non-*sapiens* species of man.

In spite of any difficulties which might arise it is clear that such a classification would give us a typical racial type for each continent. Intergradations would be relatively infrequent and it would not be too difficult to classify by inspection individuals as coming from Europe, Asia, Africa, or Australia.

The preceding paragraphs are not meant to be a jest but are simply intended to show the real value of the serological genes in racial classification, *provided* we chose to give them sufficient weight. A number of important facts have been omitted from this necessarily simplified presentation. For instance, the subgroup A_2 of blood group A is found in the real world of today almost exclusively in people of European stock and when present in peoples such as North American Indians it is almost certain proof of white mixture. Another interesting fact is the high incidence of the sub-type of Rh which we designate as Rh^o in the Negroid groups which have thus far been tested. It will be apparent from our account of our hypothetical world that the Rh negative gene is practically

13 Huxley, *Evolution, the Modern Synthesis.*

TABLE 1

Racial distribution of the Rh blood types *

Population	*Investigators*	*Number of persons tested*	*Frequencies of Rh types in percent*								
			Rh^o	Rh_1	Rh_2	Rh_1Rh_2	rh	Rh′	Rh″	Rh′Rh″	Rh_1Rh^s
White Americans	Wiener *et al.*	1,000	2.6	54.1	12.8	16.4	12.9	0.9	0.3	0	
	Wiener and Sonn	818	1.7	55.6	15.6	12.0	13.8	1.1	0.3	0	
	Wiener, Sonn, & Polivka	766	2.2	54.7	14.9	13.9	12.5	0.9	0.5	0	0.1
	Unger *et al.*	7,317	2.2	53.5	15.0	12.9	14.7	1.1	0.6	0.01	
	Levine	335	2.7	49.9	16.7	14.6	14.0	0.9	1.2	0	0
English	Race *et al.*	154	0.6	54.0	18.2	13.0	12.3	0.6	1.3	0	0
	Fisher and Race	927	2.5	54.9	12.2	13.6	14.8	0.7	1.3	0	0.1
White Australians	Simmons *et al.*	350	0.6	54.0	12.6	16.6	14.9	0.9	0.6	0	
Dutch	Graydon, Simmons, & Woods	200	1.5	15.5	12.3	17.7	15.4	1.5	0	0	
Porto Ricans	Torretrosa	179	15.1	39.1	19.6	14.0	10.1	1.7	0.5	0	
Negroes (USA)	Wiener *et al.*	223	41.2	20.2	22.4	5.4	8.1	2.7	0	0	
	Wiener	80	36.3	25.0	18.8	6.2	11.2	2.5	0	0	0
	Levine	135	45.9	23.7	16.3	4.4	7.4	1.5	0.7	0	0
Mexican Indians	Wiener *et al.*	95	1.1	48.1	9.5	38.1	0	0	0	0	0
Oklahoma Indians	Wiener *et al.*	105	2.9	38.0	17.1	36.2	0	0.9	0	0	2.9
Chinese	Wiener *et al.*	132	0.9	60.6	3.0	34.1	1.5	0	0	0	
Japanese	Waller and Levine	150	0	37.4	13.3	47.3	1.3	0	0	0.7	
	Miller and Taguchi	180	0	51.7	8.3	39.4	0.6	0	0	0	
Indonesians	Simmons *et al.*	200	0.5	74	2.5	22.5	0	0	0	0.5	0
Filipinos	Simmons and Graydon	100	0	87.0	2.0	11.0	0	0	0	0	
Australian Aborigines	Simmons *et al.*	100	4.0	53.0	21.0	15.0	0	1.0	0	0	6.0
Papuans	Simmons *et al.*	100	0	93.0	0	4.0	0	0	0	0	3.0

* A. S. Wiener, *Recent Developments in the Knowledge of the Rh-Hr Blood Types; Tests for Rh Sensitization* (American Journal of Clinical Pathology, vol. 16, pp. 477-497, 1946).

absent from the Mongoloid and Pacific peoples, as is the sub-group A_2. Also, the rare gene Rh^z is higher in the Australians and Mongoloids than in any other group (see Table 1).

It has been stated by one of the anthropologists of the present day[14] that the main aim of physical anthropology is to unravel the course of human evolution and that it may be taken for granted today that proper study of the natural history of man is concerned essentially with the mode and path of his descent. If this is indeed the main purpose of physical anthropology there can be hardly any doubt that the serological data now available will be of more use to us than craniological measurements or observations on skin color. The exact method of inheritance of skin color or of various characteristics of the skull has not yet been worked out. Therefore we can not compute gene frequencies and estimate how much of a character in any given population came from one region of the world and how much from another.

We can hardly do more than touch upon the possible conclusions which may be drawn from serological data available for actual populations. I have already mentioned the fact, fairly well established by Candela,[15] that the blood group gene B was brought into Europe by Asiatic invaders and conquerors between the 5th and 10th centuries. Mention too has been made of the fact that sub-group A_2 when found in peoples of Mongoloid descent strongly indicates race mixture, presumably with peoples of European stock.

Perhaps a still more important conclusion emerges in the relative absence of B in the Australian aborigines and the aborigines of North and South America and in the Polynesians. This suggests that the Pacific coast of Asia or at least one part of it was at some not too distant time occupied by a non-Mongoloid people possessing O and A but no B, and that the Mongoloids, originating somewhere in the interior of Asia and possessing some advantage in the arts of war or agriculture, or some other advantage, finally dispossessed this early population, of which the remains are to be found, mixed to a varying extent with Mongoloid individuals among the Ainu, in Australia, in the Melanesian islands, and among the Indians of North America. The Mongoloid element is obviously larger in American aborigines than in the other groups, but nevertheless blood group B is nearly, if not entirely, absent. This might be explained by the hypothesis of genetic drift or random extinction of genes which has been thought of in a vague

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14 G. M. Morant, *The Use of Statistical Methods in the Investigation of Problems of Classification in Anthropology* (Biometrica, vol. 31, pp. 72-98, 1939).

15 P. B. Candela, *The Introduction of Blood-group B into Europe* (Human Biology, vol. 14, pp. 413-443, 1942).

way by a number of workers[16] but the mathematical consequences of which were first fully developed by Sewall Wright.[17] According to this hypothesis, in a very small population a certain number of genes are lost each generation by random failure to survive. Either their possessor had no children or the children happened not to possess these genes or the possessors were killed before the age of reproduction or something else prevented transmission of the gene. Since there is reason to think that the Mongoloid population which succeeded in reaching the New World was small in numbers, this process may well have accounted for the loss of blood group B which seems to have taken place.

Another conclusion which is possibly permissible arises from the fact that the gene M reaches its lowest point in Australia and its highest point among the North American Indian. Birdsell and Boyd[18] suggested some years ago that this might reflect an original gradient along the Pacific coast of Asia in a hypothetical non-Mongoloid—or only partially Mongolized—population. The work of Australian investigators during and since the Second World War has served to confirm the existence of this gradient by the study of frequencies in present populations of the Pacific islands (see Figure 1).

In this necessarily brief survey there has been no space to give the reader a grounding in the essential science of genetics, but it may be found in books such as those by Waddington, Glass, Sturtevant and Beadle, and others.[19] There has been no space for consideration of the mechanism by which evolutionary forces act upon genetically determined factors, and there has likewise been no opportunity to elucidate the way in which gene equilibrium is achieved in populations possessing genes which are non-adaptive in nature, or are slowly acted on by selection.[20] No proof even has been offered that the blood grouping genes are actually non-adaptive. It may be doubted, according to Fisher,[21] if any gene is in a strict sense non-adaptive. If this is true, however, we may confidently

16 Cf. R. A. Fisher, *The Genetical Theory of Natural Selection* (Oxford, 1930).

17 S. Wright, *Evolution in Mendelian Populations* (Genetics, vol. 16, pp. 97-159, 1931); *Statistical Theory of Evolution* (Journal, American Statistical Association, vol. 26, supplement, pp. 201-208, 1931); *The Roles of Mutation, Inbreeding, Crossbreeding, and Selection in Evolution* (Proceedings, Sixth International Congress of Genetics, Ithaca, vol. 1, pp. 356-366, 1932); *Evolution in Populations in Approximate Equilibrium* (Journal of Genetics, vol. 30, pp. 257-266, 1935).

18 J. B. Birdsell and W. C. Boyd, *Blood Groups in the Australian Aborigines* (American Journal of Physical Anthropology, vol. 27, pp. 69-90, 1940).

19 C. H. Waddington, *An Introduction to Modern Genetics* (New York, 1939); B. Glass, *Genes and the Man* (New York, 1943); A. H. Sturtevant and G. W. Beadle, *An Introduction to Genetics* (Philadelphia, 1940).

20 L. Hogben, *Genetic Principles in Medicine and Social Science* (London, 1931).

21 Fisher, *The Genetical Theory of Natural Selection.*

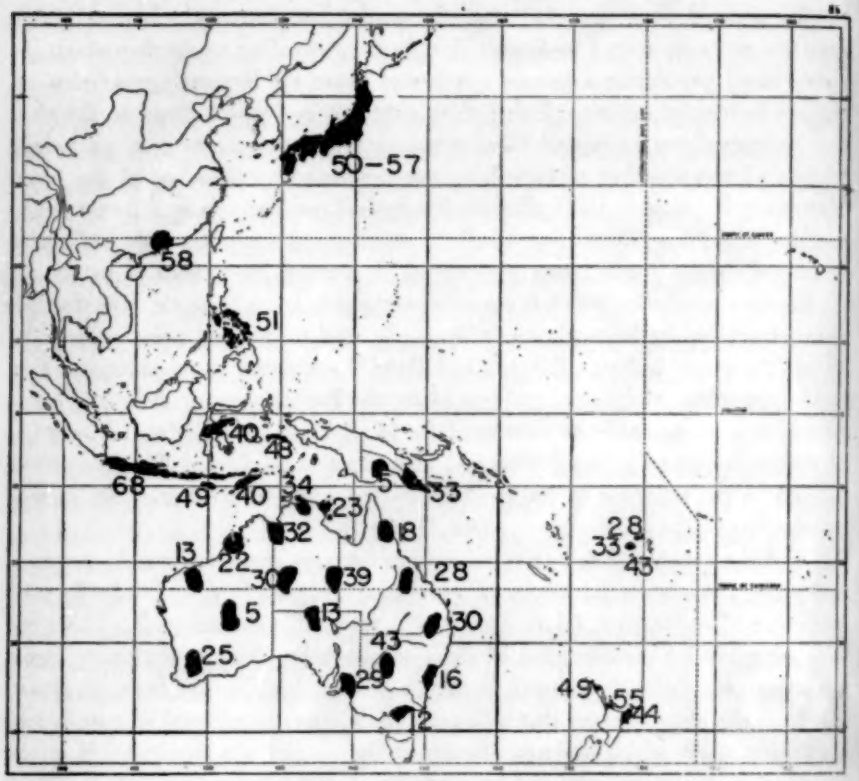

FIG. 1. Frequency of the blood group M gene in certain Pacific populations (courtesy of J. J. Graydon and R. T. Simmons).

assert that the degree of evolutionary advantage or disadvantage attaching to any of the blood group genes, with the possible exception of the Rh genes, is, so far as we know, a good deal less than that attaching to skin color in most parts of the world and possibly even to the shape of the head, with which we know other craniometric features are correlated. In other words, our position is on the whole stronger than that of the proponents of craniological measurements and it seems that on the whole we are able to draw conclusions nearly as interesting and fully as probable. If progress in this field continues, it would seem hardly too much to say that serology (or rather, genetics), is destined to oust craniometry and anthropometry as the main tool of racial anthropology.

A study of genes rather than anthropometric measurements has a further great and overwhelming advantage. Once we begin to acquire a fairly thorough knowledge of human genetics, we can begin to attempt to trace the inheritance and distribution of genes which actually influence human behavior (as for example certain as yet unidentified genes which doubtless influence endocrine development and balance in the individual). This will provide us with information of enormous importance, not only for the anthropologist, but for the sociologist and the political scientist. There is no prospect that such information can ever be obtained by following the old-fashioned anthropometric techniques.

We shall not have to depend upon serological genes alone however. A number of others have been discovered such as the secreting gene[22] (see Table 2) and the gene for tasting phenyl-thio-carbamide[23] (see Table 3) which promise to be equally useful in the anthropology of the future.

TABLE 2

Frequency of secretors and non-secretors in whites and negroes (after Schiff)

Series	*Place*	*Number of Individuals Tested*	*Percent of*	
			Secretors	*Non-secretors*
Whites	Berlin	363	78.0	22.0
Whites	New York	74	82.4	17.6
Negroes	New York	178	61.2	38.8

SUMMARY

The only scientific meaning which can be attached to the word "race" defines it in terms of gene differences or differences in gene frequencies. It is in this sense that the word is used by zoölogists and botanists. If anthropologists are to continue to use this word, or even any term which to many is but a substitute, such as "ethnic group," we must study and accumulate data on the relative frequencies of various genes which are known to vary from population to population.

22 F. Schiff, *Racial Differences in Frequency in the "Secreting Factor"* (American Journal of Physical Anthropology, vol. 27, pp. 255-262, 1940).

23 W. C. Boyd and L. G. Boyd, *Sexual and Racial Variations in Ability to Taste Phenyl-thio-carbamide, with Some Data on the Inheritance* (Annals of Eugenics, vol. 8, pp. 46-51, 1937).

TABLE 3

Percentage of "tasters" in different localities
(after Wm. C. Boyd and L. G. Boyd)

Place	*Number tested*		*Percentage of tasters*	
	Male	*Female*	*Male*	*Female*
Dublin	21	199	54.3	75.6
	24	374	59.1	72.7
Wales	125	112	44.7	74.3
Zagorsk	197	289	57.8	67.2
Kharkov	52	109	67.3	63.3
Tiflis (all)	216	239	72.3	80.8
" (West Georgians)	110	108	75.5	80.6
" (East Georgians)	60	61	66.7	82.0
Cairo (all)	310	259	77.3	78.7
" (Copts)	59	51	71.3	76.5
" (Mohammedans)	251	208	78.6	79.3
Assiut (all)	229	251	74.3	78.1
" (Copts)	182	199	73.1	76.4
" (Mohammedans)	47	52	78.7	84.7
San Sebastián (all)	54	118	76.0	71.2
" (Basques)	29	69	82.7	71.0
" (non-Basques)	25	49	68.0	71.5

Some genes, such as those causing color blindness and polydactyly, are too rare in all human populations to be useful practically. Other characteristics, such as pigmentation and hair form, have not yet been adequately analyzed genetically. The most useful genes known at present are the blood group genes, which, apart from factors rare or difficult to determine with certainty, fall into three main groups: (a) the classical Landsteiner blood groups O, A, B, and AB, with their sub-groups; (b) the M, N blood types of Landsteiner and Levine; and (c) the Rh series of genes (Landsteiner and Wiener, Levine, etc.). Before the Second World War a considerable body of information had accumulated as to racial differences disclosed by the first two sets, and during and after the war much information has been acquired concerning the—in some ways—more significant third set.

Examination of the available serological data enables conclusions to be drawn

as to the original distribution of the blood groups, the origin of the American Indian, the Australian Aborigines, the Ainu, and the white populations of Europe. Tentative times and routes of migration can be worked out. Other information, such as the degree of inbreeding in a population, can also be estimated.

It seems likely that if progress along these lines continues, the study of gene frequencies is destined to oust anthropometry as the main tool of physical anthropology as applied to racial classification.

I should like to remark, finally, that although it is now agreed by a number of anthropological workers that anthropometry and craniometry are virtually passé, the reason for this is not solely that genetic studies are now able to take their place in so many respects. It is that the metrical studies were never themselves logical or well conceived. If one believed that the bones were the most important thing about a man, then one ought to measure such bones, and such dimensions of such bones, as would provide the best information about the development of the bony structure. But actually the conventional measurements were taken with little if any regard to what was known of embryology, centers of ossification, etc. Thus the whole elaborate structure of anthropometry was never consistent with its own basic assumptions, and was destined ultimately to collapse of its own weight, even if a knowledge of genetics had not begun to diffuse, as Hogben puts it, from the laboratories to the museums.

Boston University School of Medicine
Boston, Massachusetts

THE MEANING OF HISTORY IN ANTHROPOLOGY AS EXEMPLIFIED BY NEAR EASTERN CULTURE MATERIALS[1]

BERNARD J. SIEGEL

THE FOLLOWING REMARKS are not intended to bring startlingly new facts to bear upon a revolutionary hypothesis, but rather to draw the attention of some anthropologists to a contribution which the study of certain extinct cultures can make to problems of ethnological theory. Indeed, the controversy upon which it bears will be very familiar to all, and yet of sufficient importance that any modest contribution should lead further to its resolution.

Historical inferences in cultural anthropology are largely confined to studies of contemporary non-literate peoples. They involve, among other things, the analysis of culture trait (and trait-complex) distributions, in the attempt to convert space relations into temporal or genetic relations;[2] the use of informants of more or less shattered cultures; the application of documents of missionaries, traders, explorers, settlers, and other emissaries of western civilization; and the supplementation of these materials by archaeological evidence. History in this sense concerns itself with problems of how *particular* cultures and civilizations come to be what they are, what processes of culture growth or change have operated, and in what manner, in the instance of each *specific* culture and its relations through time with other cultures.

In another sense, the conventional monograph on the life-ways of a primitive society, from a cross-sectional point of view, has frequently been labelled history. Kroeber speaks of such studies as descriptive integrations,[3] Radcliffe-Brown as synchronic histories, as opposed to history in the more conventional sense, diachronic history. Functional analyses of culture, thus, would fall under the rubric of history insofar as they treat of *particular* times and places.[4]

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1 The substance of this paper is as read at the joint sessions of the American Anthropological Association and related societies, Chicago, Dec. 30, 1946.

2 Viz., the culture area concept and age-and-area hypothesis, and Kulturkreis theory.

3 A. L. Kroeber, *History and Science in Anthropology* (American Anthropologist, vol. 37, pp. 539-569, 1935).

4 Malinowski also conceived of functionalism as historical in a related sense in his posthumous composite work, *The Dynamics of Culture Change: an Inquiry into Race Relations in Africa* (Phillis M. Kaberry, ed., New Haven, 1946), p. 34: "The functional method, if I

Actually the cultural anthropologist faces *two* methodological problems in his approach to, and treatment of, his data. The one has to do with an interest in history, in either or both of the senses mentioned, or in science—that is, the construction of a body of *general* understandings about the nature of man and his works. Kroeber, Redfield, and others have treated these two differing but supplementary approaches to cultural phenomena in various places.[5]

Ethnologists have also been confronted with another problem in method, namely, the validity of the diachronic as opposed to the functional approach (especially as Malinowski used the term). This problem arose largely from the fact that the ethnological culture-historian dealt with a reconstruction of genetic relationships among peoples who kept no written records of any of their activities. Lacking direct evidence in earlier periods of the organized meanings inherent in the more formal character of culture elements, some felt it inexpedient—to say the least—to attempt reconstructions of how particular non-literate cultures developed, except, perhaps, to the extent to which archaeological evidence could be brought to bear. Even then we should only be able to do such things as sort out and count artifacts, and have failed to show how their meanings in one period carried over to, or were transformed in a later period. In short, we should not have a continuous record of flesh and blood societies, as functioning wholes, in the process of change. So it was felt that if one wished to appreciate the workings of particular cultures, or, indeed, of any culture, he should concentrate on their contemporary manifestations.

This conclusion led to much controversy about the respective merits of conventional historical as opposed to functional methods in the interpretation of ethnological data. The debate came frequently to center upon the "legitimate" interests of cultural anthropologists, losing sight both of the avowed catholicity of anthropological subject matter—the study of all peoples in all times and places—and of the source of the historical-functional dispute. Thus Malinowski was of the opinion that all elements of a culture can be, and must be, explained in the present scene. Whatever the roots of any object or act, it occurs in some living

understand it rightly, is interested primarily in the processes of culture as an explanation of its products. It introduces thus the time element, at first on a smaller scale, but nonetheless in the real historical sense. . . . The context of time as well as the context of culture essential to the functional approach are, on the one hand, historical concepts; and on the other, they lead to the formulation of general laws of process so necessary to any reconstructive work."

5 For example, Kroeber, *op. cit.;* R. Redfield, "Introduction" (in *Social Anthropology of North American Tribes,* Fred Eggan, ed., Chicago, 1937); also *Folk Culture of Yucatan* (Chicago, 1941).

context where it must bear upon some basic need or cease to exist socially.[6] Without disputing the obvious usefulness of this conception in the study of culture—particularly its integrative and organizational aspects—it might be well to point out some important situations in which comparative regional culture materials from different time periods add meaning to analyses intended to be primarily functional, or synchronic, in nature.

In certain favored areas the archaeological records have revealed considerable numbers of documents pertaining to the functioning of several institutions through time. Among these were early China, the ancient Near East, and perhaps in the future, the Indus Valley civilization of northwestern India. These groups constituted folk societies, to a large extent, in terms of the prevailing concept of "folkness"—involving, among other things, non-literacy of the masses and a limitation of the world view in many respects to the local group, despite the existence of occasionally far-flung empires. The term "past-past" has been used at times to refer to reconstructions of extinct cultures of this sort, where cross-sectional studies of existing social structures, or certain aspects of them, are possible. It is suggested that the study of the past-past in these regions, though partly comparable to reconstructions of shattered or partially disorganized cultures, from living informants, has certain advantages over the latter. These advantages relate especially to the prevailing controversy over the roles of function and history in ethnological theory.

The early development of writing in the Near East, and the cumulative documents over several thousand years, make possible a partial resolution of the difficulties which Radcliffe-Brown and Malinowski found in the simultaneous study of diachronic and synchronic histories. These need not be mutually incompatible categories of historical data. In Babylonia, for example, to take a region with which the writer has some familiarity, the function and structure of social institutions at any one point in place and time must be partially understood in terms

6 In his latest writings Malinowski admitted the validity of reconstructionist history as an approach in the study of culture, complementary to functional interpretations (see *The Dynamics of Culture Change*, p. 28). But he continues to doubt its relevancy for the problem of change in institutional functioning, explicitly disagreeing (in another section) with Monica Hunter's stricture about the "impossibility of understanding existing institutions without a knowledge of the past." In one section of this composite posthumous book, apparently written in 1938, Malinowski orients history toward future prediction—temporal in a very general sense, really a statement of process. Thus page 6: "The very essence of history is that it has a future as well as a past. It [anthropology] has been very often an escape into the exotic, history has often remained the shelter for those who prefer their past dead and buried to tradition alive and active. The antiquarian and romantic tendency toward the retrospective and reconstructive is often nothing but an evasion of the real issues. In natural science the student looks for fundamental forces . . . very largely in order to harness them for man's future use."

of temporal developments. To be sure, the hundreds upon hundreds of documents ranging over the period roughly from 3500-600 BC bear only upon a part of the social systems and modes of relationship in any community. The anthropologist would fail to find adequate accounts of whole cultures in the same way that he purports to represent living primitive and folk societies. Nevertheless certain institutions and their ramifications are sufficiently well represented in the literature that the investigator can discover much of how they operated in a functional sense. It should be possible briefly to test the proposition of Alexander Lesser to the effect that:

> The conditions which functional investigation must take account of can be generalized as historicity—the fact that institutions, customs, beliefs, artifacts, have careers in time, and that their form and character is molded more by what has happened to them in the course of that history than by what particular things they occur associated with at any one time.[7]

Around 3500 BC early Mesopotamia began to give evidence of remarkable growing pains. The numbers of small villages which dotted the landscape frequently attained the size of towns and even large cities with an attendant complexity of social organization and division of labor. These towns and cities were loosely tied together by extensive trade, conquest, and a developing communications system, so that numbers of basic similarities characterized a broad region as a culture area. To the tools and techniques of an earlier village economy were added some new elements including large-scale irrigation, which laid the groundwork for the phenomenal spurt in community size and complexity, labelled by V. Gordon Childe as the Urban Revolution.[8]

The inventions associated with writing and literacy were an important feature in these changes, much more so than the discovery of metallurgical techniques which give the names to later periods. Business documents and royal correspondence carried many features of a common tradition over considerable distances, even though but a select group of individuals practised the art of drawing them up. These broad correspondences failed to overshadow local peculiarities, however. Consequently the practices and ideologies of one community cannot be uncritically transferred to other communities, although there seemed to have been a greater agreement between the form and meaning of culture elements of two neighboring towns than, say, among the several Plains tribes of America. In

7 Alexander Lesser, *Functionalism in Social Anthropology* (American Anthropologist, vol. 37, pp. 386-393, 1935).

8 See V. Gordon Childe, *Man Makes Himself* (New York, 1939), Ch. VII; also *What Happened in History* (New York, 1942), Ch. V.

addition, a considerable continuity in tradition prevailed throughout many years of changing dynastic and political fortunes of the area.

Philologists and legal historians engaged in the task of translating Babylonian cuneiform tablets have long made use of a concept which Malinowski formulated, presumably anew, for anthropologists—namely, "context of situation";[9] what W. I. Thomas also spoke of as "the definition of the situation."[10] In terms of philological treatment of texts this meant that every substantive and phrase acquired meaning in translation only when it had rendered clear the network of relations which it included. Very often a document will contain such a term—or terms—without yielding such information as would be necessary to elucidate its meaning, or perhaps more than one meaning, in this sociological sense. In such cases parallels might be sought in other texts, possibly referring to a similar situation, or from other contexts, preferably in the same city, but at least in the same culture province and the same time period.

The gap in these records not infrequently requires the seeking of parallels in earlier or later periods, bearing in mind always that the discovery of close correspondences does not necessarily signify identical practices. To give an example, during the Third Dynasty of the ancient city of Ur, the terms *erid* and *geme* designated "male slave" and "female slave," respectively. The literal translation, however, fails to indicate the status of this class of individuals at that time and place—their duties, rights, privileges, obligations, and general expectations, with respect to other classes of individuals with whom they interacted. The documents bearing upon these several aspects of the slave status sometimes omitted important information. Occasionally other texts from the same period help to supply that information. At other times, however, one must seek parallels in other periods. One document, for example, depicted a female slave playing an important role in court, protesting her sale, with no other hint as to why she even felt entitled to such consideration. Only from the Hammurabi dynasty, some centuries later, do we find a plausible analogy for this apparently unusual case. There the famous Hammurabi Code of laws, which contains several elements of earlier legal practice, mentions specifically that a woman whom a man has taken as concubine shall be maidservant (using the term translated as "slave") to his wife. Only if she should deny her servant status to her mistress would the woman so taken be reduced to chattel slavery and liable to sale. Furthermore an actual contract from this period exists, in which these relationships are concretely stipulated. In other

9 B. Malinowski, *The Problem of Meaning in Primitive Languages* (Supplement I to C. K. Ogden and I. A. Richards, *The Meaning of Meaning*, New York, 1936).

10 W. I. Thomas, *Primitive Behavior* (New York, 1937), p. 8.

words, under certain conditions an unfortunate young woman might fall from a free to a semi-slave status, but unless she denied the terms of her contract she might not be sold to a third party as a chattel and lose her higher status. Without assuming that precisely these conditions obtained in Ur III they do offer an adequate explanation of the case, and at the very least suggest what to look for in as yet undiscovered texts.

To give another example from the same group of texts bearing upon servitude, one document, partially destroyed, apparently mentions the redemption of a slave by a palace official. We have no indication therein as to whether this case was usual or unusual, or under what conditions it occurred. One might suspect that only certain privileged individuals received this treatment. Fortunately the fact that this set of practices had a "career in time" makes it possible to secure further analogies to the situation from the Hammurabi period. Referring to the Code again, two enactments in conjunction stipulate that no native Babylonian can be sold outside the country, presumably for debt but also in the event of capture by a foreign power. Should such an event transpire then the palace would reimburse a merchant or other representative for redeeming him. Again, specific cases where redemption under these conditions occurred are extant. With certain modifications this seems to have been the custom in earlier times as well.[11]

Finally I should like to allude to an even more convincing instance cited by Dr Thorkild Jacobsen of the Oriental Institute, University of Chicago, in his treatment of the history of democratic political institutions in ancient Mesopotamia.[12] Jacobsen points out how, in spite of strong aristocratic tendencies during the time of Hammurabi an assembly of the people, possibly but not necessarily limited to men, exercised important judicial functions in an essentially democratic way. In view of the apparent incongruence of the simultaneous existence of judicial powers vested in the community as a whole, with the otherwise great concentration of authority in a single individual, we should have little conception of the relative virility and significance of these democratic processes without recourse to earlier conditions. Indeed material bearing upon earlier periods does indicate that the citizen assembly had even wider powers, both political and judicial. The several forms of evidence together indicate that the assembly then possessed the ultimate political authority, even to selecting a "king" with special powers to act in time of crisis—but not without first securing the consent of the assembly. Thus the later

11 For a functional study of these texts, see the writer's essay, *Slavery During the Third Dynasty of Ur* (Memoir, American Anthropological Association, no. 66, 1947).

12 T. Jacobsen, *Primitive Democracy in Ancient Mesopotamia* (Journal of Near Eastern Studies, pp. 159-172, 1943).

manifestation of public participation in state affairs represents a period when the earlier configuration was undergoing a severe modification and curbing of its powers.

From the preceding it should be fairly evident that a functional interpretation of social processes focused upon any single point in time cannot do full justice to the organized meanings of the acts and artifacts of a culture. Whenever possible it is desirable to bring synchronic materials into conjunction with diachronic materials. Studies in other areas—viz., Wilbur's analysis of slavery during the Han Dynasty in China and Homan's treatment of a feudal community[13]—point up the fruitfulness of such an approach. History versus function from this vantage point poses a false dilemma.

University of Wyoming
Laramie, Wyoming

13 George Caspar Homans, *English Villagers of the Thirteenth Century* (Cambridge, Mass., 1940); Clarence Martin Wilbur, *Slavery in China During the Former Han Dynasty, 206 B.C.-A.D. 25* (Anthropological Series, Field Museum of Natural History, vol. 34, 1943).

CURRENT PROBLEMS IN JAPANESE PREHISTORY

BERTRAM S. KRAUS

FOREWORD

THE PROBLEMS of Japanese prehistory are at present little known to western readers. The field is quite confused and much of its published record is inaccessible to many Occidental students. It is the purpose of this paper to synthesize and summarize the outstanding results of research in this field and to formulate some of the main problems that now exist.

In the latter part of 1945 the writer, as a member of the United States Military Government program in Japan, had the opportunity of visiting several archaeological laboratories and university departments engaged in anthropological research. Through conversations with some of Japan's leading archaeologists, who were kind enough to provide him with numerous war-time publications in their field, the writer was made acquainted with the current problems and interests in Japanese archaeology. Since returning to the United States he has examined some of the evidence that bears upon these problems and is preparing it for publication. The present paper omits the bulk of this evidence and attempts merely to restate the problems. It will also suggest in what direction their solution appears to lie on the basis of the present status of research. The writer wishes to acknowledge particularly the guidance and coöperation of Dr Hisashi Suzuki, acting head of the Anthropological Institute of Tokyo Imperial University, and Prof Sugao Yamanouchi of the Archaeological Laboratory of Tohoku Imperial University. The plates accompanying the text are the contribution of Prof Yamanouchi.

THE EARLY CULTURES

Interest in Japanese archaeology was first stimulated by Morse's excavation of the Omori shell mound in 1879.[1] Research, thereafter, was pressed so rapidly that several attempts at a synthesis of Japanese prehistory were published in English in the period from 1890 to 1914.[2] While foreign scholars were responsible

1 Edward S. Morse, *Shell Mounds of Omori* (Memoirs, Science Department, University of Tokyo, vol. 1, pt. 1, Tokyo, 1879).

2 Included in these are: N. Gordon Munro, *Primitive Culture in Japan* (Transactions, Asiatic Society of Japan, vol. 34, pt. 2, pp. 1-212, 1906); Romya Hitchcock, *The Ancient Burial Mounds of Japan* (Report, United States National Museum for 1891, pp. 511-523); J. Milne, *The Stone Age in Japan* (Journal, [Royal] Anthropological Institute of Great Britain and Ireland, vol. 10, pp. 389-423, 1880-1881).

for much of the pioneer work in this field, after World War I research fell increasingly upon the shoulders of Japanese archaeologists. Their results were published in the various new Japanese anthropological journals that had been founded in the early period.[3] The zeal with which Japanese archaeologists prosecuted their research continued unabated throughout the years preceding the second World War and even during the war years archaeological expeditions were not far behind the conquering armies in Manchuria and North China.[4] Currently (1946) the Anthropological Institute of Tokyo Imperial University is conducting a series of shell-mound excavations in Shizuoka Prefecture.[5]

Despite the extensive archaeological literature that has resulted from recent research (1920 on) by the Japanese, earlier works are still regarded by occidental scholars as authoritative. The gradual elimination of investigation, if not interest, by American, English, and other foreign students has been due chiefly to two factors. On the one hand Japan's foreign policy gradually erected an "iron curtain" around the homeland which discouraged penetration by foreign institutions interested in scientific research. On the other, the difficulties presented by the Japanese language, in which the bulk of the newer material was written, have acted as distinct deterrents. True, a few Japanese scholars have, from time to time, treated briefly of their progress in French, German, and English articles, many of which are contained in publications not generally consulted by archaeologists, and most of which fail to provide a sufficient amount of detail for proper appraisal.[6]

Some of the problems which exist in the field of Japanese prehistory are inti-

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3 *Kōko-gaku* (Archaeology); *Zinruigaku Zasshi* (Anthropological Journal); *Kyōto Teikoku Daigaku Bungakubu Kōkogaku Kenkyū Hōkoku* (Report upon Archaeological Research in the Department of Literature, Kyoto Imperial University); *Shizengaku Zasshi* (known also as *Zeitschrift für Praehistorie*); *Kōkogaku Kenkyū* (Archaeological Research).

4 This work was carried on by The Far-Eastern Archaeological Society whose series of publications under the title *Archaeologia Orientalis* first appeared in 1935.

5 Personal communication from Dr Suzuki (June, 1946).

6 Among the most valuable are: Kashiwa Ohyama, *Yayoi-Kultur: eine prähistorische Kultur der japanischen Inseln* (Deutsche Gesellschaft für Natur- und Volkerkunde Ostasiens, Jubiläumsband, pt. 1, 1933) and *Vorläufiger Bericht über die Chronologie der Jomon-kultur der Steinzeit im Kanto (Mittel-Japan)* (Præhistorica Asiæ Orientalis, vol. 1, pp. 77-99, 1932); J. Nakaya, *Contribution à l'étude de la civilisation néolithique du Japon* (Revue des Arts Asiatiques, vol. 6, pp. 151-167, 1929-1930) and *L'influence des civilisations continentales sur l'âge de pierre au Japon* (Revue des Arts Asiatiques, vol. 7, pp. 141-155, 1931-1932); H. Matsumoto, *Notes on the Stone Age People of Japan* (American Anthropologist, vol. 23, pp. 50-76, 1921); Kotohito Hasebe, *Inhabitants of the Stone Age and the Modern Japanese* (Journal of Historical Geography, vol. 3, no. 2 [publ. in Japan]); Kōsaku Hamada, *The Dawn of Japanese Civilization* (Journal of Historical Science, vol. 40, no. 12 [publ. in Japan]).

mately bound up with those of the entire Far East. Others are peculiar to the Japanese archipelago itself. Throughout the history of archaeological research in Japan, interest in the prehistoric inhabitants themselves has been a dominant theme and has colored both the type and the orientation of research in the field. Recognizing two distinct groups now in Japan—the Ainu and the Japanese proper—scholars have taken it almost as a personal challenge to determine not only the racial origins of the two groups but their association with one or the other of the prehistoric cultural manifestations revealed through excavation. The efforts of Japanese archaeologists up to the present day, then, have been directed primarily toward identifying the prehistoric ancestors of the modern inhabitants of the archipelago. This predominance of interest has had a serious effect upon the quality and scope of their investigations of the purely cultural aspects of archaeology.

Even a casual perusal of papers on Japanese prehistory reveals the inadequacy of certain prevalent terminology employed to describe "stages" of prehistoric cultural manifestations. The earliest assemblage of cultural traits found in Japan has been described by Japanese and European scholars alike as "Neolithic." With certain changes in content and form the "Neolithic culture" endured until about the beginning of the Christian era. Throughout this entire period there is no evidence that agriculture was practised, that the potter's wheel was used, or that polishing superseded chipping as a stone-working technique. The prehistoric peoples of Japan subsisted mainly by fishing and the gathering of mussels from both the sea and fresh water streams; they built their clay pots out of the mass or by coiling; and they fashioned their arrowpoints, axes, and adzes mainly by the percussion method of chipping. Only their stone hammers and the bits of their axes were polished. The various usages, then, of the term "Neolithic" by Childe, Smith, de Pradenne, and others to denote a stage of man's cultural history distinguishable by "revolutionary" advancement in one or another specified activity, lead only to confusion when applied to Japanese prehistory.[7] Until a less ambiguous terminology is devised, it might be wiser to refer to this period simply as the "prehistoric."

It is generally agreed that a non-pottery, simple hunting stage of culture ("Palaeolithic") thus far appears to be lacking in Japan's early prehistory. Reports of extinct mammal bones found in association with stone artifacts in

7 Robert Braidwood has challenged the usefulness of certain current archaeological terminology in his article "Terminology in Prehistory" (in *Human Origins: an Introduction to Anthropology*, a syllabus of selected readings for an introductory general course in anthropology at the University of Chicago, 1945).

Hyogo (Harima) Prefecture[8] have not been seriously received by most Japanese archaeologists in view of the fact that the site was not scientifically investigated. Nevertheless, Schnell appears to accept these finds and contends that "the gap that now appears to separate the Harima discovery from the earliest Neolithic discovery will eventually be filled."[9] In 1941, however, the positive geological dating of these fossil forms *(Palaeoloxodon)* from their stratigraphical occurrence on Miyako Island in the Ryukyus to the Early Pleistocene,[10] indicates a very broad "gap" indeed. Schnell himself rightly points out that the stone implements of Japan's prehistoric period are of such a primitive nature that they could hardly be distinguished from "Palaeolithic" implements. Torii expresses the prevailing attitude of Japanese archaeologists when he writes:

> In Japan proper and in Chosen there has been no discovery of any trace of the Palaeolithic Age. . . . But the mere fact that no remains have been found does not necessarily mean that there exists no trace of the Old Stone Age. All we can safely say is that it has not been discovered yet.[11]

When we point out that Japanese archaeologists have distinguished two "cultures" in the prehistoric period, the "Jomon" and the "Yayoi," we again run into terminological inadequacies. It is a great enough strain upon the concept of "culture" to so designate an assemblage of materials recovered from a group of sites. The excavating technique by itself can recover but a very small fraction of the total "culture"—using the term as defined in the fields of ethnology and social anthropology.[12] How much greater the strain when the term "culture" is applied to little more than a particular type of pottery ware; for "Jomon Culture" and "Yayoi Culture" are distinguishable chiefly on the basis of pottery form and decoration. To avoid this misconception, we propose to speak of the "Jomon Phase" and the "Yayoi Phase," implying only temporal divisions of Japanese prehistory.

8 N. Naora, *On the Discovery of Palaeolithic Relics in the Province of Harima* (Zinruigaku Zasshi, vol. 46, pp. 155-165, 212-228). George Montandon summarizes these finds as follows: "En 1931 on a découvert la première station purement paléolithique au Japon, dans la province de Harima: quelques instruments grossièrement taillés, avec des restes d'*Elephas antiquus* et de *Loxodonta namadicus Naumanni*, l'un de ces os montrant des traces de heurts intentionnels" (*La civilisation Ainou et les cultures arctiques*, Paris, 1937, p. 7).

9 Ivar Schnell, *Prehistoric Finds from the Island World of the Far East, Now Preserved in the Museum of Far Eastern Antiquities* (Bulletin, Museum of Far Eastern Antiquities, no. 4, 1932), p. 21.

10 Y. Otuka, *On the Stratigraphic Horizon of Elephas from Miyako Island, Ryukyu Islands, Japan* (Proceedings of the Imperial Academy, vol. 17, pp. 43-47, 1941) [Japanese text].

11 R. Torii, *Ancient Japan in the Light of Anthropology* (Tokyo: Kokusai Bunka Shinkoku, 1937), p. 1.

12 Braidwood, *op. cit.*, p. 13 and n. 1.

TABLE 1

Correlation of Pottery Types

Period	*Sendai Region* (Yamanouchi)	*Tokyo Region* (Yamanouchi)	*Kwanto* (Ohyama)	*Japan Proper* (Matsumoto)	*Japan Proper* (Nakaya)
EARLY JOMON		MARIDAI IGUSA MITO			
	TSUKINOKI (lower)	TADO (lower) TADO (upper) SHIBOGUCHI			
	TSUKINOKI (upper)	KAYAMA	SASHIOGI		
EARLY MIDDLE JOMON	MUROHAMA DAIGI I DAIGI II A DAIGI II B DAIGI III DAIGI IV DAIGI V DAIGI VI	HANAZUMI (lower) SEKIYAMA KUBOHAMA MOROISO A MOROISO B MOROISO C	HASUDA MOROISO		
MIDDLE JOMON	DAIGI VII A DAIGI VII B DAIGI VIII A DAIGI VIII B DAIGI IX DAIGI X	GORYODAI KATSUSAKA-OTAMADAI KASORI E SPOT, old KASORI E SPOT, middle KASORI E SPOT, new	KATSUSAKA	EARLIER STONE AGE	ATSUDE
LATER MIDDLE JOMON	unnamed type unnamed type unnamed type unnamed type unnamed type	HORINOUCHI, old HORINOUCHI, new KASORI B SPOT, old KASORI B SPOT, middle KASORI B SPOT, new SOYA		LOWER MEDIEVAL MIDDLE MEDIEVAL	
	unnamed type unnamed type	ANGYO I ANGYO II		UPPER MEDIEVAL	
LATE JOMON	KAMEGAOKA TYPE OBORA B SPOT OBORA B-C SPOT OBORA C SPOT, old OBORA C SPOT, new OBORA A SPOT OBORA A_1 SPOT	ANGYO III A ANGYO III B ANGYO III C	OMORI		USUDE
YAYOI	MASUGATA SAKIYAMA	NOZAWA JUGOAI "LATER" YAYOI	YAYOI	LATER STONE AGE?	MUTSU?

TABLE 1

Correlation of Pottery Types

Period	Sendai Region (Yamanouchi)	Tokyo Region Proper (Yamanouchi)	Kwanto (Ohyama)
Later	Tsukinoki (upper)	Kayama	Sashiki
	Tsukinoki (lower)	Tado (upper)	
		Tado (lower)	
		Mito	
		Iousa	
		Makibai	
Middle	Murohama	Kurohama	Hasuda
	Daigi I	Sekiyama	
	Daigi II A		
	Daigi II B		
	Daigi III		
	Daigi IV	Moroiso A	Moroiso
	Daigi V	Moroiso B	
	Daigi VI	Moroiso C	
Earlier	Daigi VII A	Goroyodai	
	Daigi VII B	Katsusaka-Otamadai	Katsusaka
	Daigi VIII A	Kasori E Spot, old	
	Daigi VIII B	Kasori E Spot, middle	
	Daigi IX	Kasori E Spot, new	
	Daigi X		
Later	unnamed type	Horinouchi, old	
	unnamed type	Horinouchi, new	
	unnamed type	Kasori B Spot, old	
Middle	unnamed type	Kasori B Spot, middle	
	unnamed type	Kasori B Spot, new	
		Soya	
Earlier	unnamed type	Angyo I	Omori
	unnamed type	Angyo II	
	Oborra A Spot	Angyo III A	
	Oborra A1 Spot	Angyo III B	
	Oborra B Spot	Angyo III C	
	Oborra B-C Spot		
	Oborra C Spot, old		
	Oborra C Spot, new		
Jomon	Masudata	Nozawa	Yayoi
	Sakiyama	Jodai	
		"Later" Yayoi	

Kamegaoka Type

The word *jomon* means "rope" and refers specifically to the raised or applied clay rope designs found on certain types of pre-Yayoi pottery. When the term was first applied it was a satisfactory descriptive tool since the rope design was common to all prehistoric pottery then known. Not long after Morse's excavation, three types of prehistoric pottery came to be recognized. They were commonly called *Atsude, Usude,* and *Mutsu.* At first all three types were considered manifestations of the Jomon Phase and there was difficulty in finding characteristics which they held in common and which could be set up as diagnostic for the ware known as Jomon. By 1906 Munro complained that "a large album would be needed to give an adequate idea of the primitive pottery, of its forms and the exceeding variety of its patterns."[13] After examining descriptions of the Atsude and Usude types by Yamanouchi, Nakaya, Ohyama, Montandon, and others, it appears that they have only two traits in common: both types are hand-made and generally they are cord-marked. The type known as Mutsu (the old name for Aomori Prefecture) was found to be a late prehistoric and early historic ware, and to include the ware now known as Yayoi. Today all three terms are falling into disuse. Ohyama has proposed the name *Katsusaka* for the Atsude type, after the site in Kanagawa Prefecture; and the term *Omori,* after the Morse site, for Usude. In addition Ohyama has distinguished three other types of Jomon ware which he designates *Sashiogi, Hasuda,* and *Moroiso.*[14] All five types are found in sites in the Kwanto Plain in central Honshu. The typological seriation—as shown in the accompanying table—was confirmed by Ohyama and his colleagues after a three-year study of the topographical distribution throughout the river valleys of the Tokyo Bay region of mounds composed of either salt-water or fresh-water mussel shells.

In northern Honshu, in the district known as Tohoku, Yamanouchi and others of the Laboratory of Archaeology, Tohoku Imperial University, have set up a great number of types and subtypes of Jomon ware (see Table 1). Many of these correspond closely with pottery types recently found in the Tokyo area. Space does not permit their description here[15] but Plates 1 and 2 will illustrate the wide range in form, design, and ornamentation embraced under the term "Jomon."

Yayoi ware takes its name from Yayoi Street in Tokyo where this type of

13 Munro, *Primitive Culture in Japan,* p. 118.

14 Ohyama, *Vorläufiger Bericht über die Chronologie der Jomon-kultur,* pp. 86-88.

15 A full description of Jomon and Yayoi pottery types is contained in chapter II and appendix 1 of the writer's unpublished M.A. thesis (University of Chicago, Autumn Quarter, 1946).

pottery was first found in 1889. This ware, in its later phases ("Bronze Age"), differs from Jomon in almost every respect. Design and decorative effects are rare to absent. There are only a few typical forms. Except in its earlier manifestations ("Neolithic Age"), when certain Jomon influences were felt, it is wheel-made and often polished. Perhaps the difference between the two wares can best be summed up by describing Jomon as an exuberant florescence of individual artistry, and Yayoi as the product of the prehistoric "assembly line." Plate 3, A presents an early type of Yayoi ware and Plate 3, B shows the typical form and absence of surface treatment characteristic of developed Yayoi.

Although several authors attest to the general uniformity, both spatially and temporally, of other cultural manifestations of the Jomon Phase, the writer suspects that preoccupation with the ceramic problems has led to a certain neglect of other aspects of the archaeological assemblage.[16] It is difficult to believe that where so many local developments and variations in pottery occurred, no local differences in other traits, such as stone and bone implements, would have arisen. The factor of isolation which the very topography of Japan would have brought about, as it does to a certain extent even today, could be expected to result in some minor local differentiation. The study of these assemblages is a *must* for future research. In contrast to this situation, many monographs have appeared dealing with the subject of artificially marked or decorated human long bones found in the sites. The emphasis on this comparatively minor issue again reflects the intense interest in the prehistoric peoples themselves. Were they cannibals? Did they have a cult or system of magic rites in which artfully incised human bones played a role?

Arrowpoints found in sites of the Jomon Phase are generally unpolished and are of a great variety of shapes. Because of this variety attempts to arrange the points in a typological seriation were abandoned.[17] Polished slate knives, of the semi-lunar type, are found in most Jomon sites. Usually they have two perforations near the convex edge. None of the stone implements show very fine chipping. Polished stone hammers with a center groove protected by a ridge on

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16 Discussions with various archaeologists in Japan in the early months of 1946 revealed a general unawareness of the importance of analyses of the total archaeological assemblage of a site. Dr Yamanouchi, on the other hand, has indicated that his correlation of Sendai and Tokyo ceramic types (see Table 1) extends beyond pottery into the total assemblage (personal communication, February, 1946). The writer is unable to state whether or not this has been expressed in publication.

17 K. Hamada, "Report upon the Excavation of a Neolithic Site at Ko in the Province of Kawachi" (in *Report upon Archaeological Research in the Department of Literature, Kyoto Imperial University*, vol. 2, 1918, p. 11) [English summary].

either side are common. Violin-shaped chopping tools of crude workmanship occur frequently. They are similar to those found in the Hong Kong area[18] and at Galoempang in the Celebes.[19] *Seki-bo* (stone clubs) have been considered phallic symbols. The knobs are decorated with incised designs which are occasionally anthropomorphic. Bone, shell, and horn objects as illustrated in various Japanese publications show no unusual features either in form or in decoration. Harpoon heads generally are undecorated and bear bilateral rows of two or three barbs. In addition to pottery, other clay objects include figurines, lamps, braziers, sinkers, masks, and various personal ornaments.

Burial customs of the two phases of Japanese prehistory show sharp differences. Jomon burials are generally flexed and are found as intrusives in the shell mounds or in trenches which served as a communal burial ground. Some have been found in caves and on the floors of pit-houses. Shell bracelets occur on the forearms of some skeletons and occasionally bone and stone ornaments are found near the chest and neck. Clay vessels were often placed near the head and frequently large sherds covered the skull or part of the chest. In the early stage of the Yayoi Phase infants were buried in two urns placed mouth to mouth. Later all burials were of the "double-urn" variety. This Yayoi trait has been found only in North Kyushu thus far. Grave goods rarely accompany this type of burial.

In only a few other respects do Jomon assemblages differ from Yayoi. In both phases the dog was a domesticated animal but only in the Yayoi Phase was the horse known. The Yayoi potter made only pottery vessels, but the Jomon artisan fashioned many articles, as we have observed, from his clay. The polished stone adze with a one-sided cutting edge and short body is a Yayoi trait, as is the polished stone chisel with a groove extending across one face. Yayoi arrowpoints are of polished slate and have thin bodies and oval points. Two axe-types are particularly characteristic of the Yayoi Phase: the horned-axe and the "Seiryūto" axe. The former, found generally in the Kwanto region, has a cylindrical shaft, a round cutting edge, and a horn-like projection on either side of the upper part of the shaft. The latter is distributed from central Honshu south to Kyushu. It is characterized by a cylindrical shaft with a semicircular blade along the lower portion of one side of the shaft. The side opposite the blade is very thick, with a

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18 D. J. Finn, *Hong Kong Finds and Their Contacts with Surrounding Cultures* (Synoptic Notes of Conference, Proceedings, First International Congress of Prehistoric and Protohistoric Sciences, London, August 1-6, 1932).

19 R. Heine Geldern, "Prehistoric Research in the Netherlands Indies" (in *Science and Scientists in the Netherlands Indies*, 1945), p. 134.

groove bordering its edge. A typical Yayoi ornament is the *magatama* (comma-shaped bead). It is made of stone and was obviously suspended from the neck. Although some crudely made *magatama* have been found in Jomon assemblages, they are common in Yayoi sites and show some unusual developments. In later stages of Yayoi bronze lances, swords, and bells make their appearance, heralding the increasing contacts between Japan and the peoples and cultures of China and Korea.

We have not mentioned the type of dwelling-places that was prevalent in prehistoric Japan. To date, only the remains of pit-houses *(tateana)* attest to the mode of shelter in both the Jomon and the Yayoi Phases. The manner of their distribution in Japan and the archaeological assemblages found in association with them raise a number of interesting and important problems which the writer will discuss in a future paper. Although their occurrence and forms are adequately described in Japanese texts, their significance for the study of prehistoric cultural inter-relationships and the Ainu problem has seemingly been overlooked.

The exact nature of the transition period between the Jomon and Yayoi Phases is still undetermined. That there was not a complete break signaling the utter annihilation of the "Jomon People" is demonstrated by the association of Yayoi and late Jomon traits in the same assemblage in many sites. On the other hand, both archaeological and historical evidence indicate that the Yayoi Phase was the result of an invasion of people and culture from the continent. Yayoi-type assemblages have been found in Korea, Manchuria, and the Maritime Province of Siberia.[20] Knowledge of rice-culture, as far as we now know, first came to Japan on the waves of this invasion. There are but few Yayoi sites where bronze artifacts are absent from the total assemblage of Yayoi traits, suggesting a brief duration for the non-bronze ("Neolithic") stage of the Yayoi Phase. The first bronze implements found in Japan bear unmistakable resemblances to Han Dynasty bronzes, although China had long been acquainted with the metal (throughout the Chou Dynasty). Coins of the Eastern Han Dynasty found in Japan are the earliest archaeological evidence of contact with China, while Chinese records of the middle of the third century BC hint at contacts with the people of Japan.[21] We can therefore reasonably assume that a Yayoi invasion from Northeast Asia via Korea took place not long before about 300 BC. The

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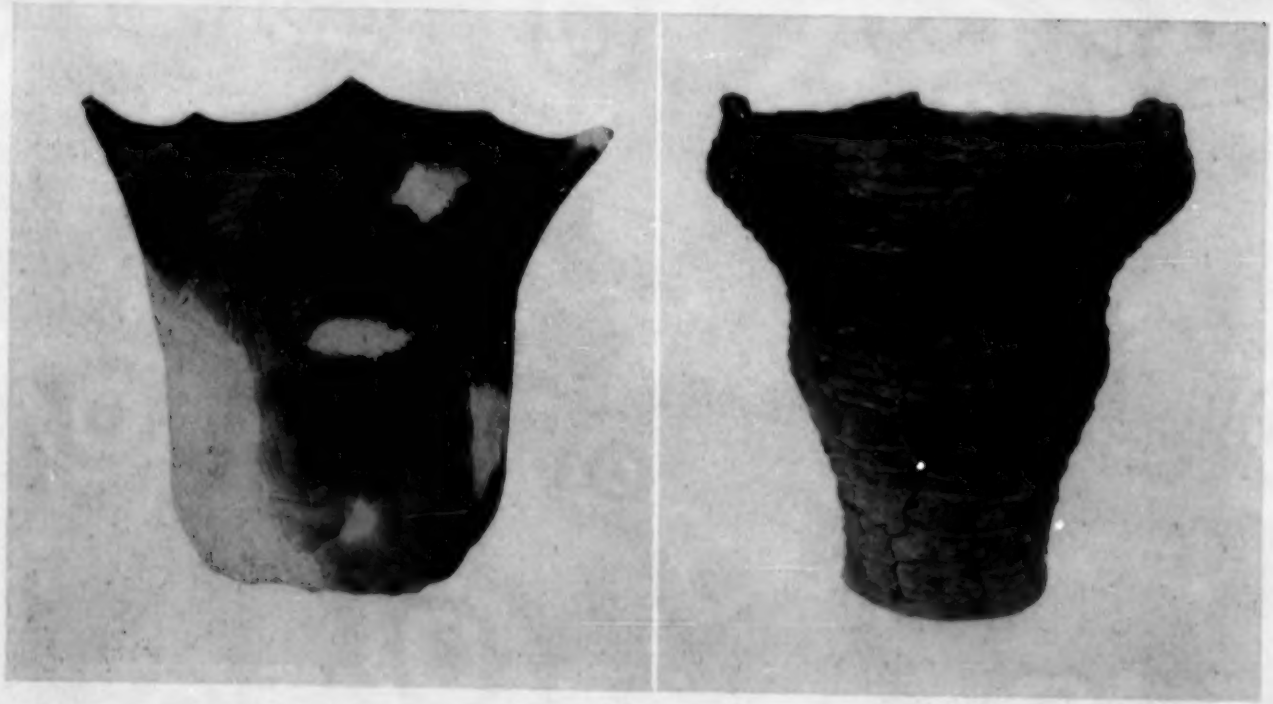
20 R. Torii, *Restes néolithiques de la Mandchourie meridionale et de la Mongolia orientale* (Præhistorica Asiæ Orientalis, vol. 1, 1932), p. 91.

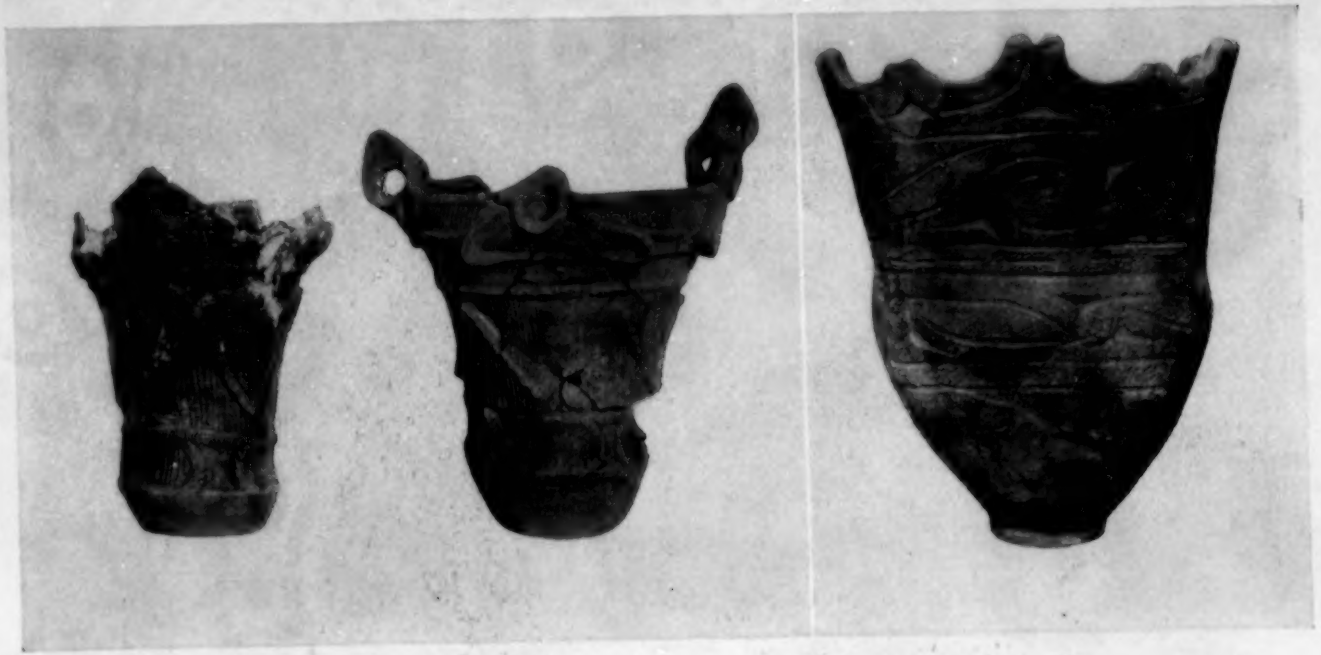
21 G. B. Sansom, *An Outline of Recent Japanese Archaeological Research in Korea, in its Bearing upon Early Japanese History* (Transactions, Asiatic Society of Japan, second series, vol. 6, pp. 3-19, 1929).



A B

JOMON POTTERY

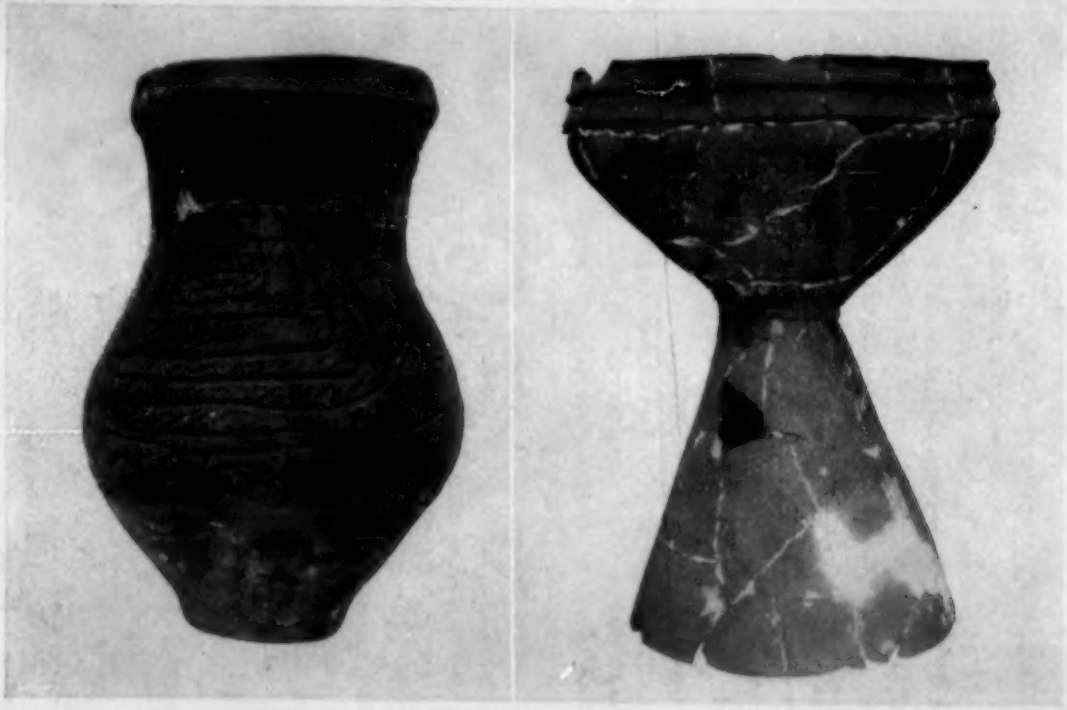
A. Kayama pot (Early Jomon); B. Moroiso B vase (Early Middle Jomon).



A B C

JOMON POTTERY

A, B. Katsusaka-type pottery (Middle Jomon); C. Angyo III vessel (Late Jomon).



A B

YAYOI POTTERY

A. Early Yayoi ("Neolithic") vase; B. Later Yayoi ("Bronze Age") pedestal vessel.

stone tools and weapons of the Yayoi people were soon supplemented by bronze ones emanating from North China. With a superior culture and armament these newcomers found it possible to advance slowly northward against the Ainu and eventually to push them out of Honshu. Both archaeology and history record quite amply the story of the Ainu retreat.

It is often inferred that the people who were responsible for the Yayoi succession in Japan were the ancestors of the modern Japanese. It would then follow that the Japanese had a Northeast Asiatic homeland prior to their present one. This inference is by no means universally accepted. Some scholars attempt to show a generic relationship between the Japanese language and Malayo-Polynesian; others point out many unquestionably southern traits in the modern Japanese culture. Although the case for a language relationship between Japanese and Malayo-Polynesian is far from demonstrated, the ethnological findings are reinforced by the work of Hasebe and Matsumura on modern Japanese physical types. Hulse, making a comparative analysis of these types, finds that both narrow-foreheaded and broad-foreheaded types, though "obviously Mongoloid," may incorporate some non-Mongoloid elements. If we postulate an early occupation of the Pacific Coast of Asia by peoples intermediate between Australoid and Caucasian, then, Hulse concludes, "their mixtures with various Mongoloid peoples at different times and places might explain . . . the Ishikawa and Wakayama [narrow-foreheaded group] in Japan."[22] Although the evidence is still far too scanty, it is possible that the Yayoi culture, borne into Japan by Mongoloids from Northeast Asia, was infiltrated by cultural influences from Southeast Asia and perhaps Malaysia. The agents of this infiltration were perhaps of a mixed (Mongoloid and Caucasian) physical type, who interbred with the Yayoi Mongoloids to produce the modern Japanese. Undoubtedly careful comparative linguistic and ethnological studies will contribute much toward clarifying this vexing problem, but, as Hulse points out, neither historical nor ethnological data can reveal the racial background of the Japanese; only the direct study of physical types, both ancient skeletal and modern living, can yield this information.

The same applies to the Ainu problem, where confusion reigns among both Japanese and occidental scholars. To the question: were the Ainu the prehistoric inhabitants of Japan and therefore the makers of Jomon pottery?—Prof Koganei, the foremost student of Ainu physical anthropology, responds

22 F. S. Hulse, "Physical Types among the Japanese" (in *Studies in the Anthropology of Oceania and Asia*, Papers, Peabody Museum of American Archaeology and Ethnology, vol. 20, pp. 122-133, 1943), p. 132.

unequivocally "das Japanischen Reich war einst ein Aino-Reich."[23] Others refer to the skeletal remains from Jomon sites as representing a people "akin" to the Ainu but not their direct forefathers;[24] or, as representing neither the ancestors of the present Ainu nor of the present Japanese.[25] Torii's most recent pronouncement is indicative of the present status of the problem; he says "I cannot unreservedly accept this theory—that the Neolithic vestiges are of the Ainu. . . . It will suffice to say that they are very much Ainu-like, if not quite of the Ainu."[26]

Even more hotly disputed is the question of Ainu origins. Here too there is a wide variety of hypotheses based upon all too little scientific investigation. Sternberg sees in modern Ainu culture many survivals of southern traits and finds, as do Rivet and Matsumoto,[27] linguistic affinities between Ainu and the Oceanic languages, on the basis of which he is convinced that the Ainu originated in an "Austronesian" homeland.[28] To Montandon,[29] Zolotarev,[30] and others the Ainu culture is part of the Palaeo-Asiatic or "Arctic" cycle of cultures. Closely related to the problem of Ainu origins is the strictly archaeological problem of the source of the culture whose manifestations in the soil of Japan have been termed Jomon. If indeed the Ainu were the bearers of this culture it can be expected that determination of the region (or regions) from which it spread to Japan might throw some light upon the area from which the Ainu originally emigrated. It is at this point that the problem broadens its scope to include the archaeology of much of the Far East. Without a far greater knowledge of the prehistoric archaeology of this portion of the globe than we now have, negative evidence, for the most part, confronts us in our search for Jomon-like traits. A further

23 Ryosei Koganei, *Über die Urbewohner von Japon* (Globus, vol. 88, 1903), p. 328.

24 K. Hamada, "Second Excavation at Ko, a Neolithic Site in the Province of Kawachi" (in *Report upon Archaeological Research in the Department of Literature, Kyoto Imperial University*, vol. 4, 1920), p. 18.

25 K. Hasebe, "Study upon the Human Bones Found at Ko in the Second Excavation" *(idem)*, p. 18.

A summary of the conflicting theories regarding the identity of the prehistoric peoples is presented in Hideo Nishioka and W. Egbert Schenck, *An Outline of Theories Concerning the Prehistoric People of Japan* (American Anthropologist, vol. 39, pp. 23-33, 1937).

26 R. Torii, *Ancient Japan in the Light of Anthropology*, p. 6.

27 P. Rivet, *Les oceaniens* (Præhistorica Asiæ Orientalis, vol. 1, 1932), p. 40; N. Matsumoto, *Le Japonaise at les langues austro-asiatiques* (Austro-Asiatica, documents et travaux, vol. 1, 1928).

28 Leo Sternberg, *The Ainu Problem* (Anthropos, vol. 24, 1929), pp. 755-799. An analysis of Sternberg's argument from ethnological data reveals many weaknesses in interpretation.

29 Montandon, *op. cit.*

30 A. Zolotarev, *The Ancient Culture of North Asia* (American Anthropologist, vol. 40, pp. 13-23, 1938).

difficulty lies in the fact that we can logically search for resemblances only to the earliest cultural manifestations of the Jomon Phase in Japan, for it can be assumed that the culture developed in ways divergent from its original pattern once it had established itself in Japan. The earliest Jomon cultural assemblages thus far identified are located in the Kwanto Plain, a region remote from any possible route of entry into the Japanese archipelago. This situation argues for the existence of earlier, as yet undiscovered, assemblages located nearer a possible source of entry, such as northwest Kyushu.

That there was a minimum of foreign cultural contact during the Jomon Phase is at least suggested by the fairly continuous line of ceramic development that can now be traced in certain areas of Japan. The general impression of more or less uniformity of the rest of the cultural assemblage, allowing for certain local differences which may come to light, further argues for the development of culture in comparative isolation during the Jomon Phase in Japan.

Although we can estimate the date when the Jomon Phase came to an end (roughly 300 BC) on reasonably sure grounds, it is a different matter to determine when it began. Certain clues exist, however, which invite an attempt in this direction. On the basis of the apparent factor of isolation, discussed above, and of the unusual advancement of the ceramic art during the Jomon Phase, we are inclined to agree with Sansom that "this early culture, in order to reach such a degree of perfection, must have gone through a very long development in Japan."[31] Jomon sites have been found from Okinawa to Hokkaido but Formosa and the Philippines, on the basis of archaeological remains, seem to belong to a different cultural sphere.[32] Torii asserts that "there has scarcely been discovered anything that bears resemblance to them [Jomon traits] . . . either in Chosen, Manchuria, Mongolia, Siberia, China or the South Sea Islands."[33] He admits, however, the occurrence of a "vestige of a similar type" at Gladekow, in the Maritime Province of Siberia, and of a "possible exception to this generalization" in Shantung Sheng. Recently Andersson reported on the Ch'i Chia and Yang Shao remains in North China, representing the earliest prehistoric cultural phases known in this area (with the exception of Chou Kou Tien).[34] Ch'i Chia pottery shows close resemblance in decorative effects to early types of Jomon ware. The cylindrical vases of the Yang Shao sites are similar in form to Katsusaka type vases. In general, the cord-marked Jomon ware seems to belong

31 G. B. Sansom, *Japan, a Short Cultural History* (New York, 1943), p. 6.

32 *Idem*, p. 4; R. Torii, *Ancient Japan in the Light of Anthropology*, p. 6.

33 *Idem*, p. 8.

34 J. G. Andersson, *Researches into the Prehistory of the Chinese* (Bulletin, Museum of Far Eastern Antiquities, no. 15, 1943).

to a North Asiatic sphere of cord-marked pottery that may have extended to North America.[35] The pit-houses, too, which are known to be associated with Jomon remains, have a definite northern orientation. These hints of Jomon connections with Northeast Asia are offered as a suggestion that the problem of Jomon origins can be solved through more extensive research on the Asiatic continent and more thorough examination of the Japanese material.

To assume a Northeast Asiatic origin for Jomon is not to preclude the possibility of the acquisition of certain traits from Southeast Asia and Malaysia, such as tanged axes, stone saws, quadrangular adzes, and the violin-shaped choppers. We have already suggested a long period of Jomon development in Japan. The early departure of the Jomon culture bearers from the continent is hinted at by the fact that neither the potter's wheel nor, apparently, rice culture were known throughout the Jomon Phase although as early as 1700 BC the prehistoric people of North Central China were using the potter's wheel and apparently had some knowledge of cultivated rice.[36] The argument from such meager information becomes an exercise in dialectics if pressed too far.

SUMMARY

The writer has attempted to survey, very briefly, the current problems in Japanese archaeology as gleaned from recent Japanese publications and discussions with Japanese archaeologists. Space has not permitted the presentation of the results of various researches carried on in Japan during the past ten years or so, from which these problems have been formulated. Discussion of excavation techniques, pottery types, trait distributions, types of sites, etc., must be left to subsequent publications. It is clear, however, that in spite of the energy with which our Japanese colleagues have prosecuted their research, the following problems still await solution:

1. Who were the bearers of the Jomon "culture"?
2. From what area was the Jomon "culture" derived?
3. What was the nature of the transition from the Jomon Phase to the Yayoi Phase?
4. What is the connection, if any, between the Yayoi "culture" and the ancestors of the modern Japanese?
5. What are the racial affinities of the prehistoric peoples of Japan?

Only a more refined and extensive examination of the archaeological evidence both in Japan and in the entire Far East can provide the answers.

CHICAGO, ILLINOIS

35 W. C. McKern, *An Hypothesis for the Asiatic Origin of the Woodland Culture Pattern* (American Antiquity, vol. 3, pp. 138-143, 1937).

36 Andersson (*op. cit.*, pp. 43-44) revealed the discovery of rice kernels in Yang Shao pots.

THE USE OF LEAD MINERAL BY THE HOHOKAM IN CREMATION CEREMONIALS

FRED G. HAWLEY

ONE OF THE MOST DISTINCTIVE and least understood artifacts of the Hohokam culture of southern Arizona is the stone palette or slab, which was in use up to the time of the Hohokam Classic period and after that became rare.

These palettes are stone slabs, usually of mica schist, and generally rectangular in shape; the size varies, but averages about 15 cm long by 10 cm wide and 0.75 cm thick. The central space is flat or slightly concave, quite smooth (apparently from wear), and usually surrounded by a more or less raised border which is sometimes ornamented by notches and incised lines.[1] Probably the most interesting and unique characteristic of these slates is the light gray mineral crust of impure lead silicate found on most specimens. This is not a natural lead silicate but a synthetic compound made to use with palettes. In some of the thicker crusts a few small pellets of metallic lead also occur. Frequently the crust or thin coating covers most of the upper surface of the palette; but more often it occurs in scattered patches concentrated near one end. The average thickness of the crust is from 1 to 2 mm, but on many specimens only traces are found. The crust may be vitrified into a glaze but more often it has a soft, loose texture and is not very adherent. It was not mentioned by the earlier Southwestern archaeologists, probably because they mistook the crust for ordinary deposits of lime or silica.

Although the palettes almost always are associated with cremations and show the effect of fire, their exact function is not readily apparent. It is not strange, therefore, that several different names have been given to them. Fewkes calls them "ceremonial stone slabs."[2] Hough calls them "plaques" and, also,

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1 So-called paint palettes have been reported found in the southeast portion of the United States, especially in Alabama (C. B. Moore, *Certain Aboriginal Remains of the Black Warrior River*, Journal, Academy of Natural Science of Philadelphia, vol. 13, pp. 125-244, 1905).

These are either rectangular or round in shape, and average larger than the Hohokam palettes. Some are reported to contain lead carbonate paint. The author is unacquainted with them and, therefore, does not wish to express any opinion as to the possibility of relationship with Hohokam palettes.

2 J. W. Fewkes, *Two Summers' Work in Pueblo Ruins* (Twenty-second Annual Report, Bureau of American Ethnology, part 1, 1904), pp. 185-186.

"ceremonial tablets."[3] Russell uses the name "magic tablets";[4] Kidder says "slate palettes";[5] and Haury calls them "palettes."[6] The author likes this last name, but thinks ceremonial stone palettes would be more descriptive. Many people have supposed that they were made for grinding or mixing paint, but present evidence suggests that this hypothesis does not fit the case. Of the hundreds examined, only a very few, not over two or three percent, show the slightest signs of adhering pigment. Some of these probably were in contact with red paint placed with the cremation and some may have been stained by mineralized water.

During the excavation of Snaketown (in south-central Arizona) by Gila Pueblo, over two hundred and fifty palettes were found.[7] One day while examining a pottery scoop from the same site, Dr E. W. Haury, then on the Gila Pueblo staff, noticed what seemed to be a small pellet of metallic lead surrounded by a partly fused mineral crust. Chemical analysis by the author proved the pellet to be metallic lead and the crust lead silicate. As this crust obviously resembled that on the stone palettes, eleven of these showing particularly heavy crusts (to provide sufficient material for analysis) were selected for testing. Analysis of each of these crusts indicated that all had a lead oxide content of from twenty-two to eighty-five percent; averaging about fifty percent. The rest of the crust was composed largely of silica with oxide of lime and several other metals. A little sulfate was present. Besides impure lead silicate, six of the crusts had from one to several small pellets of metallic lead embedded in their thicker parts.[8] Visual examination of the rest of the Snaketown palettes showed that over two-thirds of them had these lead silicate crusts; the amount, however, varied greatly.

This work was followed by the analysis of Hohokam palettes from sites near Phoenix, Casa Grande, and Roosevelt Lake. All of them contained much lead oxide, usually combined as silicate. One specimen from Roosevelt Lake also contained a little metallic lead.

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3 Walter Hough, *Culture of the Ancient Pueblos of the Upper Gila Region, New Mexico and Arizona* (Bulletin, United States National Museum, vol. 87, 1914), pp. 30-32.

4 Frank Russell, *The Pima Indians* (Twenty-sixth Annual Report, Bureau of American Ethnology, 1908), p. 112.

5 A. V. Kidder, *An Introduction to the Study of Southwestern Archaeology* (New Haven, 1924), p. 112.

6 Harold S. Gladwin, Emil W. Haury, E. B. Sayles, and Nora Gladwin, *Excavations at Snaketown: Material Culture* (Medallion Papers, no. 25, Gila Pueblo, Globe, Arizona, 1937), p. 121.

7 These have been thoroughly described and illustrated in Gladwin, Haury, Sayles, and Gladwin, *op. cit.*

8 More complete details of the analysis, with comments, may be found in F. G. Hawley, "Chemical Investigation of the Incrustation on Pottery Vessels and Palettes From Snaketown" (Gladwin, Haury, Sayles, and Gladwin, *op. cit.*, Appendix IV).

From the author's own collection from south-central Arizona sites nine palettes were examined: one from a site near Florence, two from Buckeye, two from Phoenix, and four from a site near Coolidge. With the exception of one from the last group, all gave tests for lead. Three showed traces of lead crust on the reverse side. Two also contained small pieces of metallic lead.

After the Snaketown report was published in 1937, it was decided to continue the investigation of the palettes as opportunity offered in order to verify and extend our knowledge of this unusual subject. The first tests made were on the L. Spruell collection of material from a site near Coolidge. Seven of these eleven palettes gave positive tests for lead oxide and one had a little metallic lead.

In 1941 the Los Angeles County Museum of History, Science, and Art was visited. Mr Arthur Woodward was absent, but his assistant, Miss Marian Hollenbach, brought out the palettes from the Grewe site near Coolidge and assisted with the tests. Previous experience had by now made it possible to identify positively the more characteristic crusts by inspection; where there was any doubt, chemical tests were made. The crust on all but three of the sixty-nine palettes contained lead oxide. At first no crust was seen on eight of these, but when microchemical tests were made, it was found that five of the eight had distinct although minute amounts of lead. In most cases this was found in corners or small depressions where it had been protected from abrasion. Metallic pellets were found on two palettes, and it is probable that more could have been discovered but further search would have damaged the specimens. The following chemical analysis[9] was made on the crust from one of these specimens; it is very similar to most of those previously made on the Snaketown material.

Lead oxide	PbO	47.0%
Copper oxide	CuO	0.3%
Calcium oxide	CaO	11.9%
Iron and Aluminum oxide	Fe_2O_3&Al_2O_3	10.2%
Sulfur trioxide	SO_3	3.2%
Silica	SiO_2	24.2%
Carbon dioxide	CO_2	trace

In the Casa Grande Museum twenty-five palettes were examined.[10] Nineteen of these contained lead oxide and on one of them was a small lead pellet. In

9 The microchemical tests used proved the presence of lead compound but did not indicate with what element the lead was combined.

10 This disregards five flat but very irregularly shaped stone slabs without any border, some of which may or may not be prototype palettes.

the Pueblo Grande Museum near Phoenix were eighteen whole palettes and seventeen fragments, some of which were rather small. Sixteen of the whole ones and nine fragments gave positive lead tests. It is probable that many of the barren pieces came from palettes which had lead crusts on other parts of them.

In the fall of 1942 Dr Haury offered for testing sixteen palettes from the Museum of the University of Arizona. These came from several sites, most of them near Tucson. Four of the palettes failed to give any test for lead. After they had been tested, Dr Haury explained that three of the four came from the same source, and that he had always regarded them with suspicion as, on stylistic grounds, he had thought they were imitations and now felt even more sure of it. These three, therefore, are not included in this report.

The University of Arizona was visited again in the fall of 1945 for the purpose of testing a new lot of palettes. Thirty-eight of these came from the Hodges site situated a few miles northwest of Tucson, four were from the University of Arizona Indian Ruins about five miles east of Tucson, one was from Kinishba near Fort Apache, one was from a site near Winkelman, and four were of unknown provenience. All contained the usual lead crust, excepting four from the Hodges site. Only six had so little crust that microchemical tests were necessary. Dr Haury identified five of the specimens as prototype palettes; three of these had a moderate to considerable amount of lead oxide.

During and since World War II Gila Pueblo has been closed to the public, but in April, 1946, Mr H. S. Gladwin kindly made arrangements to permit a reëxamination of much of the Snaketown material. The principal object was to apply microchemical tests for lead to the tablets on which no lead crust had been seen at the first examination. One drawer of fifty-six palettes was taken as representing the total of about two hundred and fifty found at Snaketown. Thirty-six of this lot had very definite lead crusts, but on twenty little or none could be seen. These were tested chemically and all but five of them gave distinct reactions. This made a total of ninety-one percent with lead crusts or coatings. Included in the lot were six specimens made of hard dense stone that probably would be classified as prototype palettes. Four of these gave reactions for lead. One seemed sufficiently different from the usual type to warrant special mention (see below).

During the early summer of 1946 five palettes were received from Mr W. S. Fulton, director of the Amerind Foundation Museum at Dragoon, Arizona. Three came from Tres Alamos and two from Westfall Ruin. All had lead crusts, and on one from Tres Alamos the crust was especially heavy. On one of the Westfall palettes the lead crust had become a particularly fine lead glaze.

In the private collection of Mrs Patsy Sutton of Tucson are three palettes, two from Rincon and one from a site near Benson. Tests of these indicated a little lead mineral located in the grooves of each specimen. Fred Wilson of Phoenix has seven stone palettes from various localities in the Salt River valley. All of these show more or less lead crust and one of them shows several small pellets of metallic lead.

Besides the Hohokam palettes already listed, fifteen others from miscellaneous localities in Arizona have been examined. Twelve contained lead oxide.

The Mimbres culture is generally considered to have been in contact with and distantly related to the Hohokam. The Cosgroves, who excavated the Swarts Ruin, a Mimbres culture site in the Mimbres valley of southwestern New Mexico, report finding fifty-six palettes or tablets. Six of these were found with burials and the rest in fills or beneath the floors of rooms. No palettes are reported from the few cremations found. It was through the kindness of Mr Donald Scott, director of the Peabody Museum of Harvard University, that eleven of the Swarts Ruin palettes were made available for testing. Careful chemical tests showed coatings of lead mineral on eight of these; two of these coatings were rather thin and six were decidedly so.

These palettes are distinctly different from those typical of the Hohokam. Apparently they were made locally and may not have served the same function. They average smaller, are more primitive looking, and rather asymmetrical in shape. None have raised borders but some do have slightly notched edges. Two are made of sandstone and the rest of rather soft clayey shale. The lead coating was too scanty and impure from admixed clay to permit tests necessary to determine whether they had been subjected to fire. The general appearance of palettes and lead coating seemed to indicate that either they had not been ignited, or, if they had, it was at a low temperature. Evidently the Mimbres palettes need further study.

A summation of the tests made since 1937 gives three hundred and twenty investigations made and of these two hundred and seventy-eight or eighty-six and nine tenths percent show the presence of lead silicate crust.

Lead does not occur in nature nearly so frequently as most people suppose. The earth's crust contains less lead than it does titanium, vanadium, tungsten, or uranium, and these are considered to be rather rare metals. Except in glazed pottery paint and in the crust on these palettes and on some stone slabs from the southeast portion of the United States, lead seems not to have been used by the Indians of America. Since independent discovery of the properties of the mineral in two closely adjoining areas of the Southwest (the glaze paint area of the

Little Colorado and the palette area of south-central Arizona) seems improbable, it is possible that evidence of diffusion of usage may be discovered. No relationship between its use in glaze paint and on palettes has been uncovered so far, but the discovery of lead on the palettes of Pueblo III period (at Swarts Ruin) brings the early usage appreciably closer to the period of lead and copper glaze paint used on Little Colorado pottery (early Pueblo IV) than hitherto had been known.[11]

It seems certain that the use of lead mineral on the palettes was general in all of the Hohokam territory from the Pioneer period through the Colonial and into the Sedentary, a span of several hundred years.[12] These findings confirm our earlier idea that the lead crusts are an integral and important trait in the stone palette complex, and probably result from some occult ceremony which the Hohokam considered necessary to their well-being. It seems probable that the occasional reduction of metallic lead was not intentional but, rather, an incidental occurrence resulting from several conditions which happened to be favorable.

One indication of the importance the Hohokam people attached to the lead mineral is the labor necessarily expended to obtain it. Considerable distance had to be travelled to the few scattered lead deposits, all situated in the mountains; and the actual labor of digging in the hard rock with non-metallic tools must have been strenuous. It is probable that we may never know all of the detail of just how and why these people used the lead mineral, but enough has been learned to suggest an hypothesis as to what they tried to accomplish with it.

It is certain that the Hohokam palettes with the lead crust have been heated in a mortuary fire. This is proved by their association, their appearance, and microscopic and chemical tests. They show the effect of heat in varying degrees: some crusts have been fused to a glaze, some were scintered enough to adhere well to the palette, while many were scarcely scintered at all and can be easily rubbed off. Lack of sufficient firing to make the crusts adherent probably explains their absence from some palettes. Loss of crust easily could occur after the cremation when the bones and artifacts were being raked together for burial; also loss can occur during the excavation and cleaning of palettes by archaeologists, unless much care is taken.

The proportion of lead oxide and its appearance varies in different crusts but is fairly constant in different areas of the same crust. Absence of more than one

11 The temporary (and probably accidental) occurrence of a black lead glaze paint on Pueblo I black on white pottery in the region of Durango, Colorado, seems to have been unrelated to Pueblo IV use of glaze paints and equally unrelated to lead crusts on Hohokam palettes.

12 Gladwin, Haury, Sayles, and Gladwin, *op. cit.*, p. 125.

kind of crust on any one palette indicates that they were used but once. The only fairly common elements aside from lead which can impart a low melting point to silicates are sodium and potassium. Silicate crusts containing sodium but no lead were found on a very few prototype palettes. We do not know whether this is of special significance or not.

The smoothly worn surface and slight concavity of most palettes indicates that something has been ground or mixed on them, but the soft texture of the mica schist and the slight amount of wear proves that the material ground or mixed was not very hard and the grinding did not continue for long. All lead minerals are soft, but any that could have been used in this case almost certainly would have been impure and have contained more or less hard siliceous gangue mineral; this, if broken and ground on the palette, would have left pits and deep scratches. Absence of these makes it probable that the lead mineral was first broken and given a preliminary grinding on some larger and tougher stone, then transferred to the palette with water or other liquid and probably some other solid ingredient. The whole mass then would have been further ground and mixed. The Gila Pueblo collection contains a stone slab that may have been used for preliminary grinding. It is of hard, somewhat porous, volcanic rock, and looks like some of the rather large prototype palettes, although it came from the Santa Cruz phase of the Hohokam culture. It contains considerable lead mineral, but instead of this being scattered over the surface as on most palettes, it is all found in small pits as would be the case if the mineral had been brushed off after grinding.

Lead silicate and lead oxide almost never are found in nature. The only lead minerals suitable and common enough to have been used to form lead oxide for the crust are lead carbonate and lead sulfide. Of the two it seems more reasonable to think that the carbonate was used, because moderate heat easily changes this to lead oxide, whereas it would be a long and difficult task for the Hohokam, with their limited equipment, to produce lead oxide from the sulfide. Careful search for residual sulfide was made, but none was ever found.

There is little point in trying to account for the presence of silica, because it is a very common substance and could have come from any one of many sources. Attrition from wear of the palette would introduce a little silica and alumina, but not lime or sulfate. Lime (calcium oxide) may have been added in the form of limestone or as sea shells (calcium carbonate), but we are inclined to think that it was added as wood ashes. Ashes might seem appropriate for a death cult; moreover, besides lime, ashes also would have provided the silica, sulfate, soda, and potash contained in the crusts. Tests for phosphate showed very little present, thus proving that bone was not used to provide lime.

In none of the many palettes examined was any charcoal or gravel found embedded in or adhering to the crusts, and very few showed any smoke blackening. This would seem to indicate that the palettes were heated on top of and not in or under the fuel, and that the yellow reducing flames had about burned down to a bed of coals before the palettes were placed on the cremation.

On many of the thicker crusts little mounds, spatters, and bubbles are found. Apparently the mineral mixture containing water or, more probably, some vegetal juice would, when heated on the palette, have boiled and spattered to form the roughened surface usually found. Sometimes the more liquid portion ran over the edge and onto the bottom where it formed a much thinner deposit than the one on top. Its thinness, granular texture and general appearance seem to indicate that the mineral flowed to the bottom as a suspension in water and not because the temperature had become high enough to melt the crust.

After the increasing heat had expelled all moisture and the temperature had reached about 300°C, much below red heat, the lead carbonate, which is white or nearly so, would decompose and leave lead oxide. At this point a spectacular change would occur: the lead oxide now would assume a strong orange red color, but the palette, still below red heat, would remain dark. Then, if the reducing conditions were strong enough (because of organic matter present or the nature of the flame), some of the lead oxide would be reduced to molten metallic lead that would run about on the palette like mercury. To a primitive people these phenomena might seem to be strong magic. The lead would remain molten at a comparatively low temperature, and any slight movement of the palette could cause it to spill over the sides. Undoubtedly more metallic lead was reduced than can now be found. When the temperature reached about 500°C, or near red heat, the lead oxide would combine with the silica and other elements to form the scintered lead silicate crust. The red color of the lead oxide would now disappear, but both crust and palette would assume a different shade of red because of being red hot.

The scattered and uneven patches of crust on some palettes give the impression that the mineral mixture was poured or dribbled onto them. It may be that some palettes tipped over in the fire before the scintering occurred and so lost the mineral; then the priest or attendant might have righted the hot palette and, from a distance (because of the heat), dropped more mineral mixture onto it, though he was not able to spread it evenly.

Other reasons why the Hohokam might have considered lead carbonate to be a magic mineral and appropriate for ceremonies are its great weight, its high lustre, and its poisonous nature.

It might be interesting to speculate as to whether there can be any connection between the mortuary use of palettes containing lead mineral which turns red when heated sufficiently and the rather extensive use of red ocher on the bones of skeletons found in various parts of the world.

Apparently the use of stone palettes was virtually discontinued in the Classic period.[12] We would like to suggest two possible reasons for this: (1) increased danger in going to the mines with hostile tribes moving into the territory, and (2) increased difficulty in mining with crude tools after the surface mineral had been exhausted.

A good many other Hohokam artifacts—stone, bone, pottery and shell—have been tested for lead but, with the exception of two pottery vessels found with cremations, the results were negative. The occasional reduction of lead mineral to metallic lead on the Hohokam palettes may have little scientific significance, but does have a certain popular interest in that it probably represents the earliest production of lead in North America.

Method for Testing Lead Silicate Crusts

In making the quantitative chemical analysis of the crusts the standard methods commonly employed in most metallurgical laboratories were used.

For the micro determination of lead the following procedure is used: First warm the palette to 60° or 70°C, then apply to the area to be tested a few drops of 25 percent hydrochloric acid. Now evaporate until dry and add two or three drops of the following chromate solution:

Potassium bichromate	0.1 gm
Acetic acid	3 cc
Ammonia	1 cc
Water	10 cc

After this has stood several minutes, rinse the palette gently in water to remove the excess yellow reagent. A brilliant canary yellow precipitate that adheres to the palette and is insoluble in water proves the presence of lead. On a good many palettes this chromate test was confirmed by the well-known potassium iodide reaction.

The presence of lead crust can be detected by the use of X rays. It is well-known that lead or any of its compounds is practically opaque to these rays while ordinary stone composed of the elements of lower atomic weight, such as silicon, aluminum, calcium, magnesium, etc., is relatively transparent to them. This method readily distinguishes lead crusts from others such as lime, silica, etc. It is not as satisfactory for very tiny specks of lead; also a very few elements of high atomic weight (gold, bismuth, mercury, etc.) would give similar tests, but these are too uncommon to require consideration.

The author wishes to thank the many people who have extended help and permitted examination of the stone palettes in their care. Special thanks are due Dr E. W. Haury for suggestions and help in preparing this paper.

Tucson, Arizona

LEWIS HENRY MORGAN AND THE AZTEC "MONARCHY"

CHARLES GIBSON II

THE THEORIES of Lewis Henry Morgan have received critical attention mainly from anthropologists, whose method, very valuable in itself, supposes that Morgan made adequate use of the evidence he possessed. An examination of Morgan's scholarly habits, however, reveals weaknesses which render suspect some of his conclusions, quite apart from their verifiability by anthropological tests. The present paper examines these habits as they were applied to the society of Aztec Mexico.

It is evident first that a striking coincidence exists between Morgan's conception of Aztec society and his general conception of the status of all American aboriginal peoples. The latter may be briefly stated.

The American Indians never rose above the Middle Status of Barbarism. Their development parallels the development of other societies. "The history of the human race is one in source, one in experience, and one in progress." In this general development the Middle Status of Barbarism appeared in the eastern hemisphere with the domestication of animals and in the western hemisphere with irrigation, the cultivation of maize and other plants, and the use of adobe and stone in architecture. In both hemispheres this status prevailed until the employment of iron, during which time American societies were unique because of the "unequal endowments" of the two hemispheres.[1]

Not all the American aborigines had reached the Middle Status of Barbarism. Though society progresses along fixed lines, contemporary peoples are not necessarily equally advanced. The American Indians east of the Mississippi Morgan placed in the Lower Status of Barbarism, and those of New Mexico, Middle America, and Peru, in the Middle Status of Barbarism. Certain other American societies lived still in the Upper Status of Savagery.[2]

Although the Middle Status of Barbarism in America differed from that in the rest of the world, nevertheless, in corresponding statuses, Morgan believed, societies "must have been, in the main, substantially similar."[3] Four of the necessary attributes of the Middle Status of Barbarism, whether in the eastern

1 Lewis Henry Morgan, *Ancient Society or Researches in the Lines of Human Progress from Savagery, through Barbarism to Civilization* (New York, 1877), pp. vi, 11, 24-26.

2 Pages 10-13. (All page references hereafter without further specification are to Morgan, *Ancient Society*.)

3 Pages 16-17.

or the western hemisphere, were the gens, the phratry, the tribe, and the confederacy of tribes. No society could pass from a confederate to a coalescent form of tribal organization without advancing from the Middle to the Upper Status of Barbarism. Since no society in America had reached this Upper Status, America could offer no example of tribal coalescence.[4]

Similarly the Middle Status of Barbarism could not sustain monarchical government. At this status, government could be only "of *two powers,*" i.e., a military commander and a council of chiefs. In any period of Barbarism monarchy must be anachronistic, for, being incompatible with a gentile organization, it could appear only in civilization.[5] In support of this view Morgan depreciated the apparent monarchies of Greece in the period of Barbarism as "founded on usurpation" and as "illegitimate" in popular consideration. They were "alien to the ideas of gentile society"; they were only "germs out of which the later kingdoms arose"; the "so-called kingdoms" of the heroic age of Greece were "military democracies, and nothing more."[6]

Morgan's conception of Aztec society conformed to his general rules for the Middle Status of Barbarism. The alignment was achieved in part by analogy with the Iroquois. "That which is true of the latter," he said, referring to the Iroquois, "was probably in a general sense true of the former [the Aztecs], so that a knowledge of one will tend to elucidate the other." The sources for knowledge of the Iroquois were "definite and complete." Those of the Aztecs were "far from satisfactory."[7] Morgan announced his policy of rejecting the "romance" of the Spanish chronicles and of using "any facts they may contain which harmonize with what is known of Indian society."[8]

Morgan's position required that the Aztec society possess the gens, the phratry, the tribe, and the confederacy, but not the coalescence. It required that the traditional Aztec monarch be only a war-chief, and that the Aztec government be one of two powers. He found the gentes in Herrera's account of Tenochtitlan, whose four quarters were further subdivided with the "community of persons" as a unit. This community, Morgan said, was "presumptively . . . a gens." He offered some further tenuous evidence, concluding, "It cannot as yet be affirmed that the Aztecs were organized in gentes."[9] The phratry, he said, "must have existed, reasoning upon general principles." He found only "mere glimpses" of it. With very meager references to authorities, he inspected

4 Pages 66-67.
5 Page 124.
6 Pages 124, 242 ff.
7 Page 123.
8 *Idem*, pp. 186-188; see also Lewis Henry Morgan, *Montezuma's Dinner* (North American Review, vol. 251, 1876), p. 272.
9 *Ancient Society*, pp. 197-201, 209.

"lineages" in Tlascala and Tenochtitlan, which "it seems highly probable were . . . phratries." He found tribes in the accounts of Acosta, Herrera, and Clavigero, stating that the Aztecs had been "originally one people" but had "fallen into seven and more tribes by the natural process of segmentation." He failed to mention here, that, elsewhere in his scheme, tribes were formed by cohesion and not by segmentation.[10]

Morgan next considered the famous triple alliance of Mexico. Without citation he asserted that each "tribe" was independent in local government, that the Aztec war-chief was the military commander of the entire confederacy and that (in conformity with Iroquois practice) the Tezcocans and Tlacopans had a voice "either in the election or in the confirmation of the Aztec war-chief."[11]

By redefining the word "empire" Morgan next made it appear that no empire had existed in Mexico. The confederacy was not a coalescence because the gentes (whose existence he now affirmed) would not permit the incorporation of conquered peoples.[12]

The functions of the council and the so-called monarch he made analogous with Iroquois experience. Previous writers had presented the council "in an improbable form" when they limited it to four members of the same lineage.[13] Montezuma held "the same office" and held it "by the same tenure" as did the principal chiefs of the Iroquois confederacy. Morgan offered "a conjectural explanation" of the Aztec dynastic succession which differed from his authorities but which was "seen to harmonize with Indian usages, and with the theory of the office of an elective Indian chief."[14]

In connection with this strained accommodation of Aztec society to the general plan for all society, it will be of interest to examine briefly the development of Morgan's thought as it appears from his earlier writing. We may observe that Morgan extended his conception of Iroquois society to include all American aborigines before he had taken any steps to examine thoroughly the literature on the Aztecs. Many of his most important statements were never substantiated by any citation to authority.

In his early writings he had found barbarism and monarchy not incompatible.[15] He had not distinguished between monarchs and war-leaders.[16] He

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10 Pages 98, 198, 189-190.

11 Page 192.

12 Pages 188, 193-194.

13 Pages 203-205.

14 Pages 206-213.

15 Lewis Henry Morgan, *Aristomines the Messenian* (The Knickerbocker, vol. 21, 1843), p. 25; *idem, Letters on the Iroquois, by Skenandoah: Addressed to Albert Gallatin, Ll.D., President New York Historical Society* (American Review, vol. 5, 1847), p. 253.

16 *Aristomines*, p. 26; *Letters on the Iroquois*, p. 182.

thought monarchy "inherent to society in its primitive state." Government by a king, he believed, was of "spontaneous suggestion," and would be natural when several families sought to organize for mutual protection.[17] All political institutions in this earlier scheme progressed from monarchy toward democracy.[18] The Greeks "began with monarchy."[19] The Iroquois had passed beyond monarchy and were developing toward democracy.[20] He accepted and referred specifically to the Aztec "monarchy."[21]

Thus Morgan's plan as it developed traversed stages directly contrary to the final conclusion. Nearly thirty years before the publication of *Ancient Society*, however, he had postulated the unity of American aborigines. In 1868 he published an account of his discovery of the "gens" system among the Iroquois twenty years previously, and of his discovery in 1858 of the same system among the Ojibwa. This "rendered probable," he said "its prevalence among the remaining stocks of the American aborigines."[22] But even before he became aware of this coincidence of gentile organizations, he had affirmed the unity of American Indians. "Indian life is about the same over the whole republic," he wrote in 1850. The Indians have passed "through all the intermediate stages, from extreme rudeness to comparative civilization." He advised the student of ancient Iroquois life to study Catlin's scenes "at the skirts of the Rocky Mountains." "There are diversities, it is true," he conceded, "but Indian life is essentially the same."[23]

For at least three years after 1850 Morgan continued to believe that government necessarily progresses from monarchy to democracy.[24] By 1856, however, this view had changed. With regard to the Aztecs the change was expressed in the denial of a monarchical government in Mexico. "The Aztecs were thoroughly and essentially Indian," he said. Though more advanced than some of the other tribes, their government "was an hereditary oligarchy, very similar to that of the Iroquois." His testimony was "drawn from the very nature of true Indian institutions."[25] The hunter state, he said, is "essentially one of individual free-

17 *Letters on the Iroquois*, p. 448.

18 *Idem*, pp. 447 ff., 452.

19 *Idem*, p. 449.

20 *Idem*, p. 451.

21 *Idem*, p. 180.

22 Lewis Henry Morgan, *A Conjectural Solution of the Origin of the Classificatory System of Relationship* (Proceedings, American Academy of Arts and Sciences, vol. 7, May 1865-May 1868), pp. 436-437.

23 Lewis Henry Morgan, *The Fabrics of the Iroquois* (Stryker's American Register and Magazine, vol. 4, 1850), pp. 341-342.

24 Lewis Henry Morgan, *Athenian Democracy* (New York Quarterly, vol. 2, 1853), pp. 341-342.

25 Lewis Henry Morgan, *Laws of Descent of the Iroquois* (Proceedings, American Association for Advancement of Science, part 2, Cambridge, 1858), pp. 142-143.

dom," and the American Indians "desired, and would tolerate, no other." Despotism could come only after "consolidation . . . by conquest."[26]

In 1869 he could ask whether *any* American Indians "had advanced beyond the oligarchical form, into even the incipient states of monarchy." Now he stated that there were no empires and no emperors in America. He compared the Aztecs to the Iroquois, "in intelligence, in the useful arts, and in their civil institutions," and stated categorically that, like other American Indians, the Aztecs "were also divided into tribes." He appealed for some one to write a work called "A History of the Aztec Confederacy," pointing out that the so-called king was actually a war-leader, and that his palace was really a communal house. In all this, Morgan expressed his views with conviction, and without reference or without adequate reference to the literature of Mexico.[27] The views were expanded in the article *Montezuma's Dinner* and in *Ancient Society*.

Morgan was convinced of his conclusions regarding Aztec society before he met Bandelier. He converted Bandelier to his views. Yet an important part of Morgan's evidence, used in *Montezuma's Dinner* and in *Ancient Society* depended on the references furnished him by Bandelier. This evidence was given to support conclusions already made. Bandelier provided him with lists of usable quotations, and sent pre-publication corrections of the Mexican chapter of *Ancient Society*.[28]

While Morgan would, naturally, avail himself of the expert knowledge of Bandelier, it is clear that he took over Bandelier's data unthinkingly and mechanically, without adequate check of the sources for himself. Citations occur in Morgan's writing which correspond exactly to specific references sent to him by Bandelier, or to misreadings of them which could have resulted only from an imperfect knowledge of the sources. One set of such coincidences is found in their use of the Kingsborough volumes. Of six such references in the writing of Morgan five certainly may be found in the published Bandelier-Morgan correspondence, all antedating the appearance of *Ancient Society*. The six references are as follows: (1) A reference to Ixtlilxochitl *(Historia Chichimeca)*, Chapter 32, *apud* Kingsborough IX, 219, in regard to the *teuctli* in Tezcoco.[29] (2) A reference to Sahagun, Chapter 18, in regard to the election of the "king."[30] (3) A reference to Tezozomoc, Chapter 97, in regard to the relative powers of

26 *Laws of Descent of the Iroquois*, pp. 146-147.

27 Lewis Henry Morgan, *The "Seven Cities of Cibola"* (North American Review, vol. 108, 1869), pp. 495-498.

28 Leslie A. White (ed.), *Pioneers in American Anthropology: the Bandelier-Morgan Letters, 1873-1883* (Albuquerque, 1940), vol. 1, pp. 164, 216, 224 ff.

29 *Ancient Society*, p. 207. 30 Pages 208-209.

Montezuma and the senate.[31] (4) A reference to Ixtlilxochitl *(Historia Chichimeca), apud* Kingsborough IX, 243, in regard to the membership of the Tezcocan council.[32] (5) A reference to Tezozomoc, Chapter 51, *apud* Kingsborough V, IX, 83, in regard to the military organization by ward.[33] (6) A reference to Sahagun, Book IV, Chapter 36, in regard to the segregation of women while eating.[34]

In the third and fifth, Bandelier's translations are acknowledged by Morgan. The first may be found in Bandelier's letter of April 30, 1875, and again in Bandelier's letter of March 27, 1876.[35] The second occurs in Bandelier's letter of July 7, 1875, the third in that of November 25, 1874, the fifth March 27, 1876.[36] The last occurs in Bandelier's letter of November 8, 1875.[37] In none of these does Morgan make more precise citations than Bandelier supplies. Vagueness and ambiguity, if they occur in Bandelier, occur likewise in Morgan.

In one of the cases, moreover, Morgan seriously misconstrued Bandelier's ambiguous statement and included the false reference in *Ancient Society*, where it still stands. In his letter to Morgan of March 27, 1876, Bandelier had written: "The 2 references: Ixtlilxochitl, 'Histoire des Chichiméques, &c' (Translation) p. 219; chap. xxxii, Crónica Mexicana, by Tezozomoc, in vol. ix of Kingsborough. Chap. LI, page 83."[38] Morgan assumed that both page and chapter number of the Ixtlilxochitl citation referred to the edition of Kingsborough, and interpreted them accordingly in a note in *Ancient Society*. Had he examined the source of the reference, he would have realized that the two do not agree. Bandelier, without Morgan's knowledge, had used an older edition, the French translation of Ternaux-Compans. Morgan confidently copied the chapter and page numbers that Bandelier had sent him and applied them erroneously to the volumes of Kingsborough.[39]

However convincing in themselves, these cases are atypical. For most such occasions, where Morgan employed citations to authority, he referred his readers not to the volumes of Kingsborough but to Herrera and Clavigero, for which he had the English translations of Stevens and Cullen respectively. He tried to

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31 Page 204.
32 Page 205.
33 Page 200.
34 *Montezuma's Dinner*, p. 289.
35 White, *Pioneers in American Anthropology*, vol. 1, pp. 214, 264.
36 *Idem*, pp. 233, 192, 264.
37 *Idem*, p. 245.
38 *Idem*, p. 264.
39 Fernando de Alva Ixtlilxochitl, "Historia Chichimeca" (in Edward Kingsborough, ed., *Antiquities of Mexico, London*, 1830-1848), vol. 9 (1848), pp. 219, 237-238; Fernando d'Alva Ixtlilxochitl, *Histoire des Chichimèques ou des anciens rois de Tezcuco* (Paris, 1840), p. 219; Morgan, *Ancient Society*, p. 207.

relate Bandelier's references to Herrera to his own edition but found that the chapters did not agree. Similarly the passages which he sent to Bandelier from his edition did not check with the original.[40] Left to his own resources, he was not entirely successful. In a section devoted entirely to the proof of the statement that the Mexicans ate but one meal a day he cited only one authority, Clavigero, and in the passage referred to Clavigero states that the Mexicans ate two.[41] He referred in the text of *Ancient Society* to a statement of Herrera, citing in the note the *History of Mexico,* the title of Clavigero's work, but had the correct volume and page number for Herrera's *History of America.*[42] Again, in *Montezuma's Dinner,* he quoted a statement concerning Mexican dikes which he ascribed to Herrera, citing in the note Clavigero's *History of Mexico* without giving the author's name but with the correct reference to Clavigero's account of the dikes.[43]

A documentary criticism of Morgan's writings, therefore, indicates a want of exact scholarly method. Morgan's general thesis, with its wide generalities and its close compartmentalization of the evolutionary process, he considered to be an inviolable law. Only by distortion of the authorities could he reconcile aboriginal Mexican social forms with the Middle Status of Barbarism. To achieve this aim he introduced new concepts into the study of Mexican society, concepts which contradicted his own previously expressed views. He permitted himself further to accept uncritically whatever evidence was supplied to him in support of his new position. To this end Bandelier's scholarly contributions were accepted without question; at least one was misinterpreted by Morgan without examination. Without Bandelier's aid in providing textual support for his theories, Morgan was reduced to the omission of all such support or to his own powers of scholarship, which were never equal to his capacities for bold and striking theorization.

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40 White, *Pioneers in American Anthropology,* vol. 1, pp. 204-205, 210-211, 246.

41 Francesco Saverio Clavigero, *The History of Mexico* (Philadelphia, 1817), vol. 2, p. 262; Morgan, *Montezuma's Dinner,* p. 288.

42 Morgan, *Ancient Society,* p. 211; Antonio de Herrera y Tordesillas, *The General History of the Vast Continent and Islands of America, commonly call'd The West-Indies, from the First Discovery Thereof* (London, 1725-1726), vol. 3, p. 66.

43 Morgan, *Montezuma's Dinner,* p. 289; Clavigero, *The History of Mexico,* vol. 2, p. 361.